













(GENTLEMAN'S CLUB)

THE FLOWERING PLANTS  
AND THE FERNS.

THE 18th EDITION.

WITH ADDITIONS AND CORRECTIONS.

AND NUMEROUS FIGURES ILLUSTRATIVE OF THE UNBELIEVED  
PLANTS, THE COMPOSITE PLANTS, THE GRASSES,  
THE AIR PLANTS.

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## INTRODUCTION.

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By the time a fifth edition was required, so great was the demand in this country for something more than the Linnæan method, that it was considered the time had arrived for the experiment being fully made of using the Jussieuan or Natural System for the general arrangement; while the Linnæan was introduced into the preface as an index to the other, for those who still cling to it, as well as for beginners. Accordingly the plan was followed, so advantageously employed by Beck in his *Flora of the Middle States of North America*, Mackay in his *Flora Hibernica*, and Koch in his *Flora Germanica*, of giving a synoptical Linnæan Table of the Classes, Orders, and Genera, referring to the place in the main body of the work where the species is described and arranged according to the natural method.

That this experiment was not unsatisfactory is demonstrated by the fact, that a new edition has been again demanded, notwithstanding that it was not allowed to walk the course, Mr. Babington, after the fifth edition was printed, having brought out his *Manual*, arranged precisely in the same way, and Mr. Steele, in 1847, his *Field-Book*, in which also a natural system is professedly followed. The Linnæan method is not, therefore, now reverted to.

"Tempora mutantur, et nos mutamur in illis," is a trite, although not a classical, adage. Of late years so great has been the demand for cheap publications, that some have predicted that, ere long, the only vehicle of communication will be a newspaper. The time, however, is not yet arrived, when the general readers of the "broad sheet" could appreciate a description of plants. But it has been deemed advisable to reduce, in the present edition, the size of the page and of the type. By this means, without increasing the price, not only are all the useful observations in former editions retained, and many others added, but synoptical tables are given of all the orders under each

great division, and also similar tables of the genera under each order, the detailed characters of the orders being placed as formerly at the head of the genera, and those of the genus at the head of the species.<sup>1</sup>

By those who desire fuller information respecting the *natural affinities* of Plants, especially as concerns universal Botany, the following works may be studied with advantage:—Dr. Lindley's *Introduction to Botany*, and his admirable *Vegetable Kingdom*; Dr. Walker Arnott's article "Botany," in the 5th vol. of the 7th edition of the *Encyclopædia Britannica*; the 7th and last edition (by Sir W. J. Hooker) of Sir J. E. Smith's *Introduction to Botany*; and the second part of Dr. Balfour's *Manual of Botany*.

In most Floras of this country published previously to the *British Flora*, however excellent in other respects, either too much or too little space was devoted to the generic and specific descriptions and synonyms: in the one case swelling the book to a size which entails both expense on the purchaser, and difficulty in consulting the several volumes; in the other, reducing the technical characters to the shortest possible compass, so that they can scarcely be available, except to persons who are partially acquainted with the plant under examination, or with some of its near allies. Between these extremes a middle course was steered, by giving diagnostic remarks where, and where only, they appeared necessary for the discrimination of British species, or such very distinct foreign ones as might possibly be found in this country, and be confounded with them; while the synonyms, with few exceptions, were confined to those of the writer who first described the plant under the name adopted, to a good figure, and in general to a reference to

<sup>1</sup> Similar analytical tables of the natural orders, and of the genera, of most of the more difficult ones have been published in Glasgow; and although intended solely for Dr. Walker Arnott's students, they may be found of advantage to all who possess the 5th or last edition of this Flora, to the pages of which reference is made.

a single Flora only of Great Britain. In the present edition these rules have been slightly departed from. So many species have been, of late years, introduced from the Continent with seed-corn, or have escaped from our gardens, and so many of our former well-known species have been split into two or more, that it has been deemed proper to extend, in several instances, the characters of both the genera and species, introducing frequently a notice of the more minute parts which a practised botanist requires to examine, but which a student may omit, if his immediate object be to attain a knowledge of the name, until he has advanced in the study. Rarely, however, have the genera or species been made to depend on such minute characters, and therefore few alterations have been proposed on the limits of either one or other from what will be found in former editions : when such alteration has taken place in the former, it is solely from a desire of simplifying the generic characters.

What is a genus, or what is a species, is a point upon which scarcely two botanists are agreed at the present day. With regard to the former, however much it may be necessary to subdivide in a system comprehending the known plants of the whole world, so as to retain only a limited number of species in each Genus, the same does not apply to a local Flora; and it is there preferable to constitute sections or subgenera, particularly when the limiting characters are inconstant, difficult, or obscure. A *species* cannot be so treated: it is formed, by our Maker, as essentially distinct from all other species, as man is from the brute creation; it can neither for convenience be united with others, nor be split into several; but the difficulty is to ascertain what is such a primitive or natural species; and it is here so great a difference of opinion exists. Some pronounce a species to be distinct if it presents a different habit or appearance to the eye, particularly if this be constant, although often

indefinable: others consider it a species, although exhibiting no difference of aspect, provided it can be defined, even although the differences are so minute that they can be detected only by the microscope; while a third party are of opinion that the validity of a species may be tested by cultivation. The Authors are not inclined to believe that any one of these tests is sufficient. Of all the works of Creation, we have a specific account only of Man; but as the others appear to be formed on the same plan, there is a strong presumption in favour of those arguments which assimilate the species of plants to what we know of the human race. With regard to mankind, it is universally acknowledged that there now exists so great diversity between an inhabitant of the torrid and an inhabitant of the frigid zone, and even of any one part of the globe and of another, that it can only be accounted for on the principle that each succeeding generation has a tendency to recede more and more, in general appearance, from the original type; and if we apply this to the Vegetable Kingdom, we must at once allow that, although cultivation may sometimes in a single year or two satisfactorily show that two supposed species are the *same*, a thousand years' cultivation cannot prove them *distinct*. The more we cultivate a plant, or the more it is limited in its wild state to a particular climate or place of growth, the more permanency is given to the peculiarities of what was originally derived from the same root, or even seed-vessel, of another apparently widely different form. Hence a rare mountainous plant may frequently be a mere alpine permanent state of some common lowland species, or a Swedish species the more northern race or state of a southern one; and it is from this cause that we see in our gardens so many called species (as in the genus *Achillea*), which cannot now be referred satisfactorily to any of the wild ones, although primarily derived from them. Knowing, then, this tendency of Nature to give permanency to

a variety of forms obtained from one primitive species, there appears to be less violence done to her laws by combining too much, than by subdivision, unless where there is an anatomical or physiological distinction. Linnæus took nearly all his specific characters from conspicuous parts, especially from the stem and foliage, and they were therefore natural ; but at the present day we are prone to select minute ones : of these some are of trifling value, while others, sufficient to constitute subgenera, are connected with the habit of the plant, and should therefore not be neglected. Indeed the time may ere long arrive, when what are now called genera or subgenera will alone be considered species, and another Linnæus be requisite to reduce the chaos into order. In the meanwhile, we have endeavoured to steer a middle course : the species admitted in former editions are seldom reduced, unless where it was found that the characters were insufficient or variable ; and as rarely has sanction been given to those which have been split off from other species, by the too-refined ingenuity of the German, Swiss, and modern Swedish botanists. If in one or two cases this neomania has been yielded to, it has been more on account of the remonstrances of the Authors' friends who had opportunities of examining the living plant, than from any conviction of either the necessity or utility of so doing.

The design of this work would not allow of so many stations being given for the rarer plants as could have been wished ; and, indeed, the Authors have been rather anxious to indicate the range of the species, than the precise spot where any particular one is found. The admirable *Botanist's Guide* of Messrs. Turner and Dillwyn, the interesting *Remarks on the Geographical Distribution of British Plants* and the *New Botanist's Guide*, by H. C. Watson, Esq., Dr. T. Mackay's valuable *Flora Hibernica*, and the various local Floras which are now

happily become exceedingly numerous, as well as the *Phytologist*, may, for information on this head, be consulted with great advantage.

Mr. J. E. Bowman, with his accustomed good judgment, suggested on a former occasion the propriety of erasing from the *British Flora* such plants as *Buffonia annua*, *Swertia perennis*, *Gentiana acaulis*, *Stipa pennata*, with some others universally acknowledged to be, at the present day, neither indigenous to the British Isles, nor naturalized among us; and our first impression was to follow his advice. But they were retained out of respect to the memory of Sir J. E. Smith, who saw reason to consider them British, and who introduced them as such not only into his *Flora Britannica*, but into *English Botany* and the *English Flora*. In the present edition the same motives have induced the Authors to permit them to remain, except in one or two instances, where there are grounds to believe that the original specimen was obtained from a garden, or that one plant had been mistaken for another. Those, however, which no longer exist in the given localities, as well as the many that have been or are daily becoming naturalized among us, whether by the agency of man or of birds, are branded with an asterisk (\*); but there are also numerous ones, as the *Martagon Lily* and *American Touch-me-not*, which can have no claim whatever to a place in our Flora: in many cases, however, they have been briefly noticed at the close of an allied species or genus; and when the genus itself is not British, an abridged character of it has been sometimes introduced into the conspectus at the head of its proper order, especially where the plant is now so widely diffused, as the *Monkey-flower*, that it might otherwise puzzle a student. With regard to synonymes, they are even more abridged than in former editions; but the reader will always find a reference to *English Botany* (*E. B.*) and its *Supplement* (*E. B. S.*). Foreign references are almost entirely omit-

ted, this *Flora* being applicable solely to the plants of Great Britain and Ireland, with the adjacent islands. Those who desire a further knowledge of the various names given, as well as a full specific character, or such as will exclude all other known plants, wheresoever found, can only attain this by consulting a General *Flora*, such as De Candolle's *Prodromus*.

It may be well to remark here, that the figures which precede the season of flowering of the plants in the descriptive pages, viz. ☉, ♂, ♃, and ♄, signify :

- ☉ (The Sun), implying that the plant is of annual duration, because the earth requires a year to perform its revolution round the sun.
- ♂ (Mars), a biennial plant ; because that planet is two years in performing a similar revolution.
- ♃ (Jupiter), a perennial plant or root ; because of the great length of time, nearly 12 years, required by that planet for such a revolution.
- ♄ (Saturn), a shrub or tree, which living for a great number of years, is represented by a planet requiring nearly 30 years to revolve round the sun.

Any peculiar terms employed, particularly among the *Compositæ* and *Grasses*, are explained at the commencement of these orders.

In preparing the present edition, the Authors have to acknowledge their obligations to many friends, not only for notes, but for permission to inspect authentic specimens. In particular they may allude to Mr. Borrer, Mr. H. C. Watson ; Mr. Backhouse, of York ; Dr. Balfour, of Edinburgh ; Mr. William Gourlie, of Glasgow ; and Dr. Bromfield, of the Isle of Wight. Specimens of all the scarcer or local species, whether indigenous or only naturalized, will be thankfully received by them both.

This volume terminates with the *Ferns* and their allies, comprehending the Cryptogamic vascular plants : the rest



of the *Cryptogamia*, or the *Cellulares* of De Candolle, have however been published uniformly with the previous editions of this work, constituting the second volume; and also with Sir J. E. Smith's *English Flora*, forming the fifth volume, and completing the Flora of the British Islands.

1st July, 1850.

## CLASSES AND ORDERS

### THE LINNÆAN SYSTEM OF BOTANY.

12-19

Class.	1. MONANDRIA .	1	<i>Stamen</i>	in each flower.
	2. DIANDRIA . .	2	<i>Stamens</i>	_____
	3. TRIANDRIA . .	3	_____	_____
	4. TETRANDRIA .	4	_____	_____ equal in height.
	5. PENTANDRIA .	5	_____	_____
	6. HEXANDRIA . .	6	_____	_____ equal in height.
	7. HEPTANDRIA .	7	_____	_____
	8. OCTANDRIA . .	8		
	9. ENNEANDRIA .	9		
	10. DECANDRIA . .	10		
	11. DODECANDRIA .	from 12 to 19.		
	12. ICOSANDRIA .	20 or more,	on the <i>calyx</i> .	
	13. POLYANDRIA .	20 or more,	on the <i>receptacle</i> .	
	14. DIDYNAMIA . .	4 ;	2 long and 2 short.	
	15. TETRADYNAMIA	{	6 ; 4 long and 2 short.	
			<i>Flowers cruciform.</i>	
	16. MONADELPHIA	<i>Filaments</i> united at the base in one set.		
	17. DIADELPHIA .	<i>Filaments</i> united in two sets ; <i>Flowers</i> mostly <i>papilionaceous</i> .		
	18. POLYADELPHIA	<i>Filaments</i> united in three or more sets.		
	19. SYNGENESIA .	<i>Anthers</i> united ; <i>Flowers</i> compound.		
	20. GYNANDRIA . .	<i>Stamens</i> inserted on the <i>Pistil</i> .		
	21. MONŒCIA . . .	<i>Stamens</i> and <i>Pistils</i> in <i>separate Flowers</i> on the <i>same plant</i> .		
	22. DIOECIA . . .	<i>Stamens</i> and <i>Pistils</i> in <i>separate Flowers</i> on <i>two separate plants</i> .		
	23. POLYGAMIA . .	<i>Stamens</i> and <i>Pistils</i> <i>separate</i> in some flowers, <i>united</i> in others, either on the <i>same plant</i> , or on <i>two</i> or <i>three</i> distinct ones.		
	24. CRYPTOGAMIA .	<i>Fructification</i> concealed.		

*The Twenty-four Classes are subdivided into ORDERS.*

(See the characters of the Orders in the next page.)

The *Orders* of the first thirteen Classes are founded on the number of *Styles* in each flower :

MONOGYNIA, 1 *Style*; DIGYNIA, 2; TRIGYNIA, 3; TETRAGYNIA, 4; PENTAGYNIA, 5; HEXAGYNIA, 6; HEPTAGYNIA, 7; OCTAGYNIA, 8; DECAGYNIA, 10; POLYGYNIA, many *Styles*.

The *Orders* of the 14th Class are two :

1. GYMnosPERMIA, *Seeds* 4, apparently naked.
2. ANGiosPERMIA, *Seeds* in a distinct seed-vessel.

The *Orders* of the 15th Class are two :

1. SILICULOSA, *Seeds* in a short Pod, or Pouch.
2. SILIQUOSA, *Seeds* in a long Pod.

In the 16th, 17th, and 18th Classes, the *Orders* are founded on the number of *Stamens* in each set :

TRIANDRIA, 3; PENTANDRIA, 5; DECANDRIA, 10, &c., in each set.

The *Orders* of the 19th Class are three, and are founded on the structure of the flower, which is *compound* :

1. ÆQUALIS . . . All the *florets* perfect.
2. SUPERFLUA . . . { *Florets* of the *disk* perfect ; of the *ray*,  
with Pistil only.
3. FRUSTRANEA . . . { *Florets* of the *disk* perfect ; of the *ray*,  
with neither Stamen nor Pistil.

The *Orders* of the 20th Class are founded on the number of the *Stamens* :

MONANDRIA, 1; DIANDRIA, 2, &c.

The *Orders* of the 21st and 22d Classes are founded on the number, union, and situation of the *Stamens* :

MONANDRIA, DIANDRIA, &c. MONADELPHIA, &c.

The *Orders* of the 23d Class are three, and are :

MONŒCIA, *perfect flowers*, accompanied with others that are *barren* (without *pistil*), or *fertile* (without *stamens*), or *both*, all on *one plant*; DIŒCIA, the same, on *two different plants*; TRIŒCIA, the same, on *three different plants*.

The *Orders* of the 24th Class are Natural Orders or Families :

1. FILICES<sup>1</sup>; 2. MUSCI; 3. HEPATICÆ; 4. LICHENES;
5. CHARACEÆ; 6. ALGÆ; 7. FUNGI.

<sup>1</sup> In the following pages considered a subclass; including *Polypodiaceæ*, *Osmundaceæ*, *Ophioglossæ*, *Lycopodiaceæ*, *Marsileaceæ*, and *Equisetaceæ*.

# SYNOPTICAL TABLE

## THE CLASSES, ORDERS, AND GENERA OF BRITISH PLANTS,

ARRANGED ]  
ACCORDING TO THE LINNÆAN METHOD,  
WITH REFERENCES TO THE PAGE WHERE THE SPECIES ARE DESCRIBED  
IN THE BODY OF THE WORK.

### CLASS I. MONANDRIA.<sup>1</sup> 1 stamen.

#### Ord. I. MONOGYNIA.<sup>2</sup> 1 style.

\* *Leaves without stipules.*

1. **SALICORNIA.** Perianth single, inferior, tumid, fleshy, obscurely lobed. Style short, terminal; stigmas 2—3-fid. — Sea-side plants. p. 350.
2. **HIPPURIS.** Perianth single, superior, forming a very indistinct rim to the germen. Style and stigma simple. — Fresh-water erect plants. p. 138.
3. **ZOSTERA.** Perianth 0. Stamens and pistils inserted alternately in two opposite rows upon one side of a thin flat spadix. Style bifid. — Marine plants with long leaves. p. 472.
4. **CENTRANTHUS.** Perianth double. Calyx a thickened margin at the top of the germen, at length unfolding into a pappus. Corolla spurred at the base. — Terrestrial plants. p. 192.

<sup>1</sup> From *μνος*, *one*, and *ανη*, here applied to the stamen. The other classes, as far as *Icosandria*, meaning 20 stamens, are likewise derived from the Greek numerals. *Diogynandria* in the same way is from *πολυς*, *many*.

<sup>2</sup> From *μνος*, *one*, and *γυνη*, here made applicable to the pistil or style. When the styles are so short as not to be visible, the stigmas are reckoned.

**\*\* Leaves with stipules adnate to their petiole.**

5. *ALCHEMILLA*. Perianth single, inferior, turbinate. Style lateral. Stigma entire. p. 124.

Ord. II. *DIGYNIA*. 2 styles.

6. *CALLITRICHE*. Flowers axillary, solitary. Fruit with 4 cells and seeds. — Leaves opposite. Aquatic or marsh plants. p. 370.
7. *FESTUCA*. Flowers imbricated, glumaceous. Fruit a caryopsis, 1-seeded. — Leaves alternate. Terrestrial grasses. p. 543.

CLASS II. *DIANDRIA*. 2 stamens.

Ord. I. *MONOGYNIA*. 1 style.

\* *Perianth double, inferior.*

† *Corolla monopetalous, regular.*

1. *LIGUSTRUM*. Cor. 4-cleft. Berry 2-celled. p. 263.

†† *Corolla monopetalous, irregular. Seeds inclosed in a pericarp which forms one piece.*

2. *VERONICA*. Cor. 4-cleft, rotate, not spurred. Caps. 2-celled. p. 289.

3. *LENTIBULARIACEÆ*. Cor. ringent or personate, spurred. Caps. 1-celled. p. 325.

††† *Corolla monopetalous, irregular. Germen and fruit deeply 4-lobed, or apparently formed of 4 naked seeds.*

4. *LABIATÆ* — (*LYCOPUS* and *SALVIA*). p. 305.

†††† *Sepals and petals 4.*

5. *CRUCIFERÆ*. p. 20.

**\*\* Perianth double, superior.**

6. *CIRCÆA*. Petals 2. p. 137.

**\*\*\* Perianth single and inferior, or none.**

7. *FRAXINUS*. Perianth 0. Caps. 2-celled, compressed, foliaceous at the extremity. — Trees. p. 263.

8. *CRUCIFERÆ*. Perianth 4-leaved. — Herbaceous plants. p. 20.

9. *SALICORNIA*. Perianth turbinate, fleshy, obscurely lobed. Fruit a 1-seeded utricle, included within the enlarged perianth. — Sea-side plants, p. 350.

10. *LEMNA*.<sup>1</sup> Perianth monophyllous, membranaceous, urceolate. Fruit utricular.—Fresh-water minute floating plants. p. 464.
11. *CYPERACEÆ*. Flowers glumaceous, imbricated. — Leaves with entire sheaths—(*CLADIUM* and *RHYNCHOSPORA*). p. 474.

Ord. II. *DIGYNIA*. 2 styles.

12. *CALLITRICHE*. Flowers solitary, axillary. Fruit of 4 cells and seeds. — Leaves opposite. p. 370.
13. *GRAMINEÆ*. Flowers glumaceous, imbricated. Fruit a caryopsis, 1-seeded. — Leaves alternate, with split sheaths—(*ANTHODANTHUM*, *HIEROCHLOÆ*, and *BROMUS*). p. 507.

CLASS III. *TRIANDRIA*. 3 stamens.

Ord. I. *MONOGYNIA*. 1 style.

\* *Perianth superior*.

1. *VALERIANACEÆ*. Perianth double. Cor. gibbous at the base, 5-cleft. Fruit 1-seeded. p. 190.
2. *IRIDACEÆ*. Perianth single, petaloid, 6-cleft. p. 426.

\*\* *Flowers inferior (dry and chaffy)*.

3. *CYPERACEÆ*. Flowers each of a single glume, several imbricated and forming a spikelet. Achene 1-seeded.—Leaves with entire sheaths. p. 474.
4. *GRAMINEÆ*. Flowers of 2 glumellas, with or without external glumes. Caryopsis 1-seeded. — Leaves with split sheaths—(*NARDUS*, *SESLERIA*, and *SPARTINA*). p. 507.
5. *JUNCUS*. Perianth 6-partite. Caps. 3-celled, several-seeded. p. 446.

Ord. II. *DIGYNIA*. 2 styles.

6. *GRAMINEÆ*. p. 507.

Ord. III. *TRIGYNIA*. 3 styles.

7. *MONTIA*. Cal. of 2 leaves. Caps. solitary, 3-valved, 3-seeded. — Stipules none. p. 142.
8. *HOLOSTREUM*. Cal. of 5 leaves. Caps. solitary, 1-celled, opening at the end with 6 teeth. — Stipules none. p. 70.
9. *POLYCARPON*. Cal. of 5 leaves. Caps. solitary, 1-celled, 3-valved. — Stipules membranous. p. 144.
10. *TILLÆA*. Cal. of 3 leaves. Carpels 3. — Stipules wanting. p. 146.

<sup>1</sup> This genus, placed here by Linnæus, is really monœcious, and the supposed perianth is a spathe with one barren and one fertile flower.

## CLASS IV. TETRANDRIA. 4 stamens equal in height.

## Ord. I. MONOGYNIA. 1 style.

\* *Perianth double. Corolla monopetalous, superior.*

1. DIPSACACEÆ. Flowers capitate, within a common involucre. Calyx double: one cup-shaped or membranaceous, the other minute or of bristles. Fruit 1-seeded. p. 194.
2. RUBIACEÆ.<sup>1</sup> Flowers solitary. Calyx entire or toothed at the margin. Fruit 2-seeded. — Leaves whorled. p. 186.

\*\* *Perianth double. Corolla monopetalous, inferior. Seeds 2 or more.*† *Germen deeply 4-lobed. Style from between the lobes. Fruit splitting into 4 achenes.*

3. LABIATÆ. Cal. 4-cleft. Cor. coloured. p. 305.

†† *Germen or fruit of one piece or covering, including several seeds. Style terminal.*

4. GENTIANACEÆ. Cal. 4-cleft. Cor. coloured. Stamens shorter than the corolla, alternate with its lobes. Caps. 1-celled, 2-valved at the apex. p. 265.
5. PLANTAGO. Cal. of 4 pieces. Cor. scarious, the segments reflexed. Stam. much longer than the corolla. Caps. 2-celled, bursting all round transversely. p. 337.
6. CENTUNCULUS. Cal. 4-partite. Cor. coloured. Stam. shorter than the corolla, opposite to its lobes. Caps. 1-celled, bursting all round transversely. p. 334.

\*\*\* *Perianth double. Cor. of 4 petals.*

7. EPIMEDIUM. Cal. of 4 leaves. Pet. inferior, with an inflated nectary on the upper side. Stam. opposite to the petals. p. 14.
8. CRUCIFERÆ. Cal. of 4 leaves. Pet. inferior, without a nectary. Stam. opposite to the petals. p. 20.
9. EUONYMUS. Cal. 4-cleft, with a flat disk lining the base inside. Petals perigynous, inserted into the margin of the disk. Stam. alternate with the petals. Germen 3—4-celled. p. 90.
10. CORNUS. Cal. of 4 teeth. Pet. without a nectary, superior. Germen 2-celled. p. 182.

\*\*\*\* *Perianth single.*

- 10a. MAIANTHEMUM. Perianth inferior, petaloid, 4-partite. Stamens inserted into the base of the segments of the perianth, and op-

<sup>1</sup> In some of the genera, especially *Galium*, the calyx forms so small a rim or margin to the germen as to be scarcely visible, its tubular part being incorporated with the germen.

- posite to them. Germen 2-celled.—Leaves alternate, parallel-veined, without stipules. p. 433.
11. **PARIETARIA.** Perianth inferior, 4-fid, campanulate. Stam. inserted upon the lobes of the perianth and opposite to its segments. Fruit 1-seeded.—Leaves netted-veined, with minute stipules. p. 374.
  12. **ALCHEMILLA.** Perianth inferior, 8-cleft, the 4 alternate and outer segments the smallest. Stam. inserted into the mouth of the perianth, alternate with its larger lobes. Germen 1-seeded.—Leaves alternate, with conspicuous stipules adhering to their petiole. p. 125.
  13. **SANGUISORBA.** Perianth inferior, 4-lobed, with 4 scales or bractees at the base. Stam. inserted into the mouth of the perianth, opposite to its lobes. Germen 1-seeded.—Leaves alternate, with conspicuous stipules adhering to their petiole. p. 126.
  14. **ISNARDIA.** Perianth superior, its limb 4-partite. Stamens inserted at the bottom of the limb of the perianth, and opposite to its leaves. Germen 4-celled. Capsule many-seeded.—Leaves opposite, without stipules. p. 137.
  15. **THESIUM.** Perianth superior, the limb 4-cleft. Stamens inserted at the base of the lobes of the perianth, and opposite to them. Germen 1-celled. Fruit drupaceous, 1-seeded. p. 362.

•                   Ord. II. DIGYNIA. 2 styles.

\* *Perianth double. Leaves opposite or none.*

16. **BUFFONIA.** Cal. of 4 leaves. Cor. of 4 petals.—Leaves opposite. p. 64.
17. **GENTIANA.** Cal. 4-cleft. Cor. monopetalous, 4-cleft. Capsule 1-celled, many-seeded, 2-valved at the apex.—Leaves opposite. p. 267.
18. **CUSCUTA.** Cal. 4-cleft. Cor. monopetalous, 4-cleft. Capsule 2-celled, 4-seeded, opening transversely.—Leaves wanting. p. 271.

\*\* *Perianth single. Leaves alternate with adnate stipules.*

19. **ALCHEMILLA.** Perianth 8-cleft; stamens alternate with its inner lobes. p. 125.
20. **SANGUISORBA.** Perianth 4-cleft; stamens opposite to its lobes. p. 126.

•                   Ord. III. TETRAGYNIA. 4 styles.

21. **CARYOPHYLLACEÆ.** Cal. of 4 leaves. Pet. 4, or none. Filaments conspicuous. Caps. 1-celled, several-seeded.—Leaves opposite. p. 54.
22. **RADIOLA.** Cal. of 4 leaves, united up to their middle, each



- mostly 3-cleft. Pet. 4. Caps. of 8 cells, 8 valves, and 8 seeds. p. 74.
23. *TILLÆA*. Cal. of 4 leaves. Pet. 4. Capsules 4. p. 146.
24. *ILEX*. Cal. 4-toothed. Cor. rotate, 4-cleft. Stigmas 4, sessile. Fruit fleshy, including 4 one-seeded stony nuts. p. 262.
25. *POTAMOGETON*. Perianth single, of 4 scales. Anthers sessile. Pistils 4. Achenes 4, sessile. p. 465.
26. *RUPPIA*. Perianth 0. Pistils 4. Achenes 4, pedicellate. p. 471.

## CLASS V. PENTANDRIA. 5 stamens.

### Ord. I. MONOGYNIA. 1 style.

\* *Perianth double, inferior. Cor. monopetalous. Germen deeply 4-lobed: style from between its lobes. Fruit splitting into 4 achenes.*

1. *BORAGINACEÆ*. p. 272.

\*\* *Perianth double, inferior. Cor. monopetalous. Germen or fruit of one piece or covering, including several seeds: style terminal.*

† *Stamens opposite to the segments of the corolla.*

2. *PRIMULACEÆ*. Germen and capsule 1-celled, with several seeds upon a globular free central placenta. p. 328.

†† *Stamens alternate with the lobes of the corolla.*

3. *GENTIANACEÆ*. Germen and caps. 1-celled, with several parietal seeds. Anthers straight. p. 265.
4. *ERYTHRÆA*. Germen and caps. 2-celled, linear, many-seeded. Anthers at length spirally twisted. p. 266.
5. *SOLANACEÆ*. Germen and fruit 2- or half 4-celled, many-seeded. Limb of the cor. plaited in bud. Stamens upon the cor.: anthers straight. p. 281.
6. *VERBASCUM*. Germen and capsule 2-celled, many-seeded. Limb of the cor. imbricated in bud. Stam. upon the cor.: anthers straight. p. 302.
7. *CONVOLVULACEÆ*. Germen 1—2-celled, with 4 seeds at its base. Caps. 1—2-celled, 2—4-seeded. Cor. campanulate, plaited in bud. Stam. upon the corolla: anthers straight. Stigmas 2. p. 270.
8. *POLEMONIUM*. Germen and caps. 3-celled, 3-valved. Cor. rotate. Stam. upon the mouth of the corolla: anthers straight. Stigmas 3. p. 270.
9. *AZALEA*. Germen and caps. 2—3-celled, many-seeded. Cor. shortly campanulate. Stam. free, or nearly so, from the corolla: anthers straight. p. 258.

10. *VINCA*. Fruit of 2 erect follicles. Cor. salver-shaped, the segments spirally imbricated in bud. Stam. upon the corolla; anth. straight. p. 264.

\*\*\* *Perianth double, wholly or half superior. Cor. monopetalous.*

† *Stam. opposite the lobes of the cor. and inserted upon its tube.*

11. *SAMOLUS*. Cor. with 5 scales (imperfect stamens) alternate with its lobes. p. 334.

†† *Stamens alternate with the lobes of the cor., and free from it.*

12. *LOBELLIA*. Style glabrous, with a ring of hairs below the stigma. Cor. irregular, cleft on the upper side. Anthers united, dissimilar. p. 250.

13. *CAMPANULACEÆ*. Style pubescent above the middle, without a ring of hairs below the stigma. p. 246.

††† *Stamens alternate with the lobes of the cor., and inserted upon it.*

14. *CAPRIFOLIACEÆ*. Cor. irregular (*LONICERA*), or regular (*VIBURNUM*). p. 183.

\*\*\*\* *Perianth double, inferior. Cor. of several petals.*

† *Flowers regular. Stamens distant. Fruit without a beak.*

15. *RHAMNUS*. Cal. urceolate, 5-cleft. Pet. 5, small. Stam. opposite to the petals. p. 91.

16. *EUONYMUS*. Cal. flat, 5-cleft, having a flat disk within. Pet. roundish. Stam. alternate with the petals, inserted upon the disk. Caps. 3—5-celled, several-seeded. — Shrubs, without membranaceous stipules. p. 90.

17. *PARONYCHIACEÆ*. Cal. of 5 leaves, without a flat disk. Petals reduced to mere subulate scales or filaments. Stam. alternate with the petals. Fruit (minute) 1-seeded. — Herbaceous plants, with membranaceous stipules. p. 142.

†† *Flowers regular. Stamens conniving into a tube. Fruit with a long beak*

18. *GERANIACEÆ*. p. 82.

†† *Flowers very irregular, with a spur.*

19. *IMPATIENS*. Cal. and cor. together composed of 6 pieces, two outer and lateral ones deciduous. Germen 5-celled. Caps. of 5 elastic valves. p. 86.

20. *VIOLA*. Cal. of 5 leaves, extended at the base, persistent. Pet. 5. Germen 1-celled. Caps. 3-valved. p. 46.

\*\*\*\*\* *Perianth double, superior. Cor. of 5 petals.*

21. *RIBES*. Cal. 5-cleft, bearing the petals and the stamens. Style divided. Germen and berry 1-celled, many-seeded. p. 150.

22. **HEDERA.** Cal. of 5 teeth. Pet. and stam. inserted at the top of the germen. Style single. Germen 5-celled. Berry 3—5-seeded. p. 181.

\*\*\*\*\* *Perianth single.*

23. **GLAUX.** Perianth inferior, campanulate, coloured, of 1 piece, 5-lobed. Stamens alternate with its lobes. p. 331.  
 24. **PARONYCHIACEÆ.** Perianth inferior, of 5 leaves. Stam. opposite to the leaves of the perianth, with 5 alternating subulate scales or filaments. p. 142.  
 25. **CHENOPODIACEÆ.** Perianth inferior, deeply 5-cleft. Stam. opposite to the segments of the perianth, without alternating filaments. Style 2—3-partite. p. 343.  
 26. **THESIUM.** Perianth superior. Stam. opposite to the lobes of the perianth. p. 362.

## Ord. II. DIGYNIA. 2 styles.

\* *Perianth double, inferior. Cor. monopetalous.*

27. **GENTIANACEÆ.** Germen 1-celled, many-seeded. Caps. 2-valved.—Leaves opposite. p. 265.  
 28. **CUSCUTA.** Germen 2-celled, 4-seeded. Caps. bursting all round transversely at the base, 2-celled, with the cells 2-seeded.—Parasitical leafless plants, with filiform twining stems. p. 271.

\*\* *Perianth double, superior. Pet. 5. Seeds 2.<sup>1</sup>*

29. **UMBELLIFERÆ.** p. 156.

\*\*\* *Perianth inferior. Pet. 5 or wanting.*

30. **STAPHYLEA.** Cal. coloured, 5-cleft, with an urceolate disk at the base. Pet. 5, as long as the calyx. Caps. membranaceous, with several bony seeds.—Shrubs, with compound leaves and deciduous stipules. p. 88.  
 31. **PARONYCHIACEÆ.** Cal. of 5 leaves. Pet. resembling sterile filaments or scales. Fruit 1-seeded, not winged.—Herbaceous plants. Leaves opposite, with membranaceous stipules. p. 142.  
 32. **SCLERANTHUS.** Perianth single, urceolate, contracted at the mouth. Stam. upon the throat of the perianth. Fruit 1-seeded, covered by the hardened perianth, not winged.—Leaves opposite, without stipules. p. 353.  
 33. **CHENOPODIACEÆ.** Perianth single, herbaceous, 5-cleft or -parted. Stam. inserted into the base of the perianth.

<sup>1</sup> In this division so much of the calyx is incorporated with the germen, and so minute are the segments or free portion of the limb, that at first sight, as in *Rubiaceæ*, belonging to the second division of Cl. IV. Ord. I., it would appear as if there were no calyx.

Fruit covered by the perianth, 1-seeded, not winged. — Stipules none. p. 343.

34. *POLYGONUM*. Perianth single, coloured, 5-parted. Stam. inserted at the base of the perianth. Achene 1-seeded, wingless. — Herbaceous plants, with alternate leaves and sheathing stipules. p. 353.
35. *ULMUS*. Perianth single, 4—6-cleft. Fruit longer than the perianth, compressed, winged all round (a *samara*), 1-seeded. — Trees, with alternate leaves and minute stipules. p. 375.

### Ord. III. TRIGYNIA. 3 styles.

\* *Flowers superior. Cor. monopetalous, 5-lobed.*

36. *VIBURNUM*. Berry usually 1-seeded. — Leaves simple. p. 184.
37. *SAMBUCUS*. Berry 3—4-seeded. — Leaves pinnated. p. 184.

\*\* *Flowers inferior.*

† *Perianth double. Petals 5.*

38. *TAMARIX*. Stigmas sessile, feathery. Caps. 1-celled, 3-valved, with many comose seeds. p. 140.
39. *PARONYCHIACEÆ*. Fruit with one naked seed. — Leaves with membranous stipules — (*CORRIGIOLA* and *POLYCARPON*). p. 142.
40. *CARYOPHYLLACEÆ*. Caps. 1-celled, with several naked seeds. — Leaves without stipules — (*STELLARIA* and *HOLOSTEUM*). pp. 68, 70.

†† *Perianth single.*

41. *CHENOPODIACEÆ* — (*CHENOPODIUM* and *SUÆDA*). pp. 344, 347.

### Ord. IV. TETRAGYNIA. 4 styles.

42. *PARNASSIA*. Cal. deeply 5-cleft. Petals 5. Nectaries 5, heart-shaped, fringed with globular-headed filaments. Capsule 1-celled, 4-valved, each valve bearing a longitudinal linear receptacle with numerous seeds. p. 51.

### Ord. V. PENTAGYNIA. 5 styles.

\* *Stamens inserted upon the base of the petals. Cal. of 1 piece.*

43. *PLUMBAGINACEÆ*. Cal. funnel-shaped, plaited, dry and membranaceous. Pet. 5, united at the base, bearing the stamens. Caps. 1-seeded, invested by the calyx. p. 334.

\*\* *Stam. inserted upon the receptacle, free from the cal. and petals. Cal. of 5 leaves, or 5-partite.*

44. *LINUM*. Pet. 5, entire. Germen and Caps. globose, mucronate, with 10 valves, 10 cells, and 10 seeds. p. 73.

45. SPERGULA. Pet. 5, entire. Germen and Caps. 1-celled, many-seeded. p. 145.  
 46. CERASTIUM. Pet. 5, bifid. Germen and Caps. 1-celled, many-seeded. p. 70.

\*\*\* *Stam. and petals inserted upon the calyx.*

47. SIBBALDIA. Cal. in 10 alternately large and small segments. Achenes 5, in the bottom of the calyx. p. 125.

Ord. VI. HEXAGYNIA. 6 styles.

48. DROSERA. Cal. 5-cleft. Pet. 5. Caps. 1-celled, 3-valved, many-seeded. — Leaves clothed with glandular hairs. p. 50.

Ord. VII. POLYGYNIA. Many styles.

49. RANUNCULACEÆ. Stam. inserted upon the receptacle, free from the calyx. Cal. leaves distinct. p. 3.  
 50. SIBBALDIA. Stam. inserted upon the calyx. Cal. 10-cleft. p. 125.

CLASS VI. HEXANDRIA. 6 stamens, equal in height.

Ord. I. MONOGYNIA. 1 style.

\* *Flowers complete, having a double perianth (Cal. and Cor.). Dicotyledonous plants. Leaves netted-veined.*

1. BERBERIS. Cal. of 6 deciduous leaves. Pet. 6, each with 2 glands at the base. Berry 2—3-seeded. p. 14.  
 2. FRANKENIA. Cal. of 1 piece, tubular. Pet. 5, free from the calyx. Stamens mostly alternate with the petals. Caps. 1-celled, many seeded. p. 52.  
 3. LYTHRACEÆ. Cal. of 1 piece. Pet. 6, inserted upon the calyx. Stam. alternate with the petals. p. 139.  
 4. PRIMULACEÆ. Cor. monopetalous, rotate, 6-partite, with the stamens inserted on it and opposite to its lobes.—(TRIEN-TALIS and LYSIMACHIA.) p. 328.

\*\* *Perianth single, superior, petaloid. Monocotyledonous plants. Leaves parallel-veined.*

5. AMARYLLIDACEÆ. Flowers from a spathe, but not upon a spadix. p. 429.

\*\*\* *Perianth single, inferior.*

† *Stipules none.*

6. ACORUS. Flowers arranged closely upon a thick spadix. Perianth of 6 coloured scales. p. 463.

7. LILIACEÆ. Flowers not upon a spadix. Perianth petaloid, deciduous or marcescent, never coriaceous or hard when withered. p. 432.
8. GAGEA. Flowers corymbose, not upon a spadix. Perianth of 6 persistent coloured (yellow) leaves. Stam. glabrous. Anthers erect. p. 442.
9. NARTHECIUM. Flowers racemose, not upon a spadix. Perianth of 6 persistent (yellow) leaves, somewhat coriaceous and at length hardened. Filaments woolly. Seeds with an appendage at each end. p. 455.
10. JUNCACEÆ. Flowers not upon a spadix. Perianth dry and glumaceous, of 6 pieces. p. 446.
11. PEPLIS. Flowers axillary, not upon a spadix. Perianth herbaceous, campanulate, with 6 large and 6 small teeth. — Dicotyledonous plants with opposite leaves. p. 140.

† Leaves with sheathing stipules. Dicotyledonous plants. Leaves netted-veined.

12. POLYGONUM. Flowers not upon a spadix. Perianth coloured, 5-cleft. — Leaves alternate. p. 353.

## Ord. II. DIGYNIA. 2 styles.

18. OXYRIA. Perianth single, of 4 leaves, the 2 inner ones a little larger than the 2 outer. Achene with a broad membranaceous margin. p. 360.

## Ord. III. TRIGYNIA. 3 styles.

\* Perianth single. Leaves alternate, netted-veined, with sheathing stipules.

14. RUMEX. Perianth of 6 leaves, the 3 inner afterwards enlarged and covering a triquetrous achene. Stigmas multifid. p. 357.

\*\* Perianth single. Leaves alternate or all radical, simple-veined, without stipules.

15. TOFIELDIA. Perianth 6-parted with a small 3-partite involucre. Styles short. Caps. 3—6, united up to the middle, many-seeded. p. 445.
16. SCHEUCHZERIA. Perianth of 6 leaves. Anthers elongated. Styles short. Caps. 3, inflated, 2-valved; 1—2-seeded. p. 459.
17. TRIGLOCHIN. Perianth of 6 concave deciduous leaves. Anthers lodged in the leaves of the perianth. Styles very short. Caps. 3—6, 1-seeded, united by a longitudinal column, from which they usually separate at the base. p. 458.
18. COLCHICUM. Perianth funnel-shaped, very long; limb campanulate, 6-parted, petaloid. Styles very long. Caps. 3, united at the base. p. 444.

\*\*\* *Perianth double. Leaves opposite.*

19. **ELATINE.** Cal. of 3 leaves, herbaceous. Pet. 3, coloured. p. 53.

Ord. IV. **HEXAGYNIA.** 6 styles.

20. **ACTINOCARPUS.** Germens and fruits combined at the base, spreading in a radiated manner, 2-seeded. p. 456.

Ord. V. **POLYGYNIA.** Many styles.

21. **ALISMA.** Achenes many, distinct, aggregated upon the receptacle, 1-seeded. p. 457.

## CLASS VII. HEPTANDRIA. 7 stamens.

Ord. I. **MONOGYNIA.** 1 style.

1. **PRIMULACEÆ.** Cor. monopetalous, in 7 deep segments, regular and flat. Stam. opposite to the divisions of the corolla. Caps. 1-celled. Seeds attached to a globular free central receptacle — (**TRIENTALIS** and **LYSIMACHIA**). p. 328.

## CLASS VIII. OCTANDRIA. 8 stamens.

Ord. I. **MONOGYNIA.** 1 style.

\* *Perianth double, inferior.*

1. **ACER.** Cal. 5-cleft. Pet. 5. Germen 2-lobed, 2-seeded. Caps. 2, united at the base, each with a long winged membrane (*samara*), 1—2-seeded. p. 81.
2. **CHLORA.** Cal. of 8 segments, in a single row. Cor. of 1 piece, nearly rotate: the stamens alternate with its lobes. Germen 1-celled. Stigma 2—4-cleft. Caps. many-seeded. p. 268.
3. **PRIMULACEÆ.** Cal. 8-partite, in a single row. Cor. monopetalous, rotate, 8-partite, with the stamens inserted on and opposite to its lobes — (**TRIENTALIS** and **LYSIMACHIA**). p. 328.
4. **MONOTROPA.** Cal. and cor. of 4 pieces each. Germen 4-celled, many-seeded. — Leaves none. p. 261.
5. **ERICACEÆ.** Cal. of 4 leaves or deeply 4-cleft, sometimes with 4 similar outer pieces. Cor. of one piece. Stigma entire. Germen 4-celled. p. 254.

\*\* *Perianth double, superior.*

6. **VACCINIUM.** Cor. of one piece, 4-cleft. p. 251.
7. **ONAGRACEÆ.** Petals 4. p. 134.

\*\*\* *Perianth single, inferior.*

8. *DAPHNE*. Perianth usually coloured, 4-cleft, bearing the stamens. Germen 1-seeded. p. 361.  
 9. *MONOTROPA*. Perianth of 4 pieces, with as many external alternating bracteas. Stam. free from the perianth. Germen 4-celled, many-seeded. — Leaves none. p. 261.

Ord. II. *DIGYNIA*. 2 styles.

10. *POLYGONUM*. Perianth single, inferior, coloured, 5-parted. Germen 1-seeded. — Leaves alternate, with sheathing stipules. p. 353.  
 11. *SCLERANTHUS*. Perianth single, inferior, urceolate, contracted at the mouth; tube hard and coriaceous; limb 4-cleft. Germen 1-seeded. — Leaves opposite, without stipules. p. 353.  
 12. *CHRYSOSPLENIUM*. Perianth single, half-superior, spreading. Germen many-seeded. — Leaves without stipules. p. 156.

Ord. III. *TRIGYNIA*. 3 styles.

13. *POLYGONUM*. Perianth single, inferior, in 5 deep, coloured, persistent segments. Fruit a 1-seeded achene. p. 353.

Ord. IV. *TETRAGYNIA*. 4 styles.

14. *PARIS*. Perianth inferior, of 8 leaves; 4 inner very narrow. Cells of the anthers 2, fixed one on each side of the middle of a subulate filament. Berry 4-celled. p. 432.  
 15. *ADONIS*. Cal. half-superior, 3-cleft. Cor. 4-cleft. Anthers terminal, 1-celled. Berry 4-celled. p. 181.  
 16. *ELATINE*. Cal. inferior, of 4 pieces. Pet. 4. Germen 4-celled. Caps. 4-valved. p. 53.  
 17. *MÆNCHIA*. Cal. inferior of 4 pieces. Pet. 4. Germen 1-celled. Caps. opening by 8 teeth at the top. p. 70.

CLASS IX. *ENNEANDRIA*. 9 stamens.Ord. I. *MONOGYNIA*. 1 style.

1. *PRIMULACEÆ*. Perianth double. Cal. 9-parted. Cor rotate 9-parted. Caps. 1-celled, several-seeded. p. 328.

Ord. II. *HEXAGYNIA*. 6 styles.

2. *BUTOMUS*. Perianth single, coloured, 6-parted, inferior. Caps. 6, many-seeded. p. 455.



CLASS X. DECANDRIA. 10 *stamens*.Ord. I. MONOGYNIA. 1 *style*.\* *Germen superior*.† *Fruit with a long beak, its cells 1-seeded. Stam. conniving into a tube.*

1. GERANIUM. Fruit with a long beak. p. 82.

†† *Fruit without a beak, its cells many-seeded. Stam. distant.*

2. MONOTROPA. Perianth single, of 5 leaves, cucullate at the base (petals?), with as many alternating bracteas (cal.-leaves?). Anthers 1-celled, 2-lipped. — Leaves none. p. 261.
3. PYROLACEÆ. Cal. 5-cleft. Pet. 5, sometimes connected at the base. Anthers opening with 2 pores. Seeds chaffy. — Leaves mostly radical. p. 260.
4. ERICACEÆ. Cal. deeply 5-cleft. Cor. of 1 piece, ovate or campanulate, 5-cleft. Seeds not chaffy. — Shrubby, leafy plants. p. 254.

\*\* *Germen inferior*.

5. VACCINIUM. Cor. of 1 piece. p. 251.

Ord. II. DIGYNIA. 2 *styles*.\* *Perianth single*.

6. POLYGONUM. Perianth inferior, 5-parted, coloured. Germen 1-seeded. — Leaves alternate with sheathing stipules. p. 353.
7. SCLERANTHUS. Perianth inferior, of 1 piece, contracted at the mouth; limb 5-cleft. Germen 1-seeded. — Leaves opposite, without stipules. p. 353.
8. CHRYSOSPLENIUM. Perianth half-superior, limb somewhat coloured, 5-cleft. Germen many-seeded. Caps. with 2 beaks. p. 156.

\*\* *Perianth double. Petals 5.*

9. SAXIFRAGA. Cal. superior, or inferior, or half-superior, in 5 segments. Pet. sessile. Caps. sessile, with 2 beaks, 2-celled. p. 151.
10. CARYOPHYLLACEÆ. Cal. inferior, of one piece, 5-toothed. Pet. with long claws. Caps. stalked. p. 54.

Ord. III. TRIGYNIA. 3 (*or sometimes 4*) *styles*.

11. POLYGONUM. Perianth single, petaloid. Germen sessile, 1-seeded, triquetrous. — Leaves alternate, with sheathing stipules. p. 353.
12. CARYOPHYLLACEÆ. § *SILNEÆ*. Perianth double. Cal. of 1-piece, 5-toothed. Germen stalked, many-seeded. — Leaves opposite, without stipules. pp. 54, 55.
13. CARYOPHYLLACEÆ. § *ALSINEÆ*. Perianth single or double. Cal. 5-parted. Germen sessile, many-seeded. — Leaves opposite, without stipules. pp. 54, 62.

14. SPERGULARIA. Perianth double. Cal. 5-parted. Germen sessile, many-seeded. — Leaves opposite, with membranaceous stipules. p. 144.

Ord. IV. PENTAGYNIA. 5 (or sometimes 10) styles.

\* *Germen superior, distinct, 5—10 in each flower.*

15. SIBBALDIA. Cal. in 10 alternately large and small segments. Pet. 5, and the stam. inserted into the mouth of the calyx. Achenes 5—10, without a gland at their base. p. 125.  
 16. COTYLEDON. Cal. 5-parted. Cor. of 1 piece, tubular, 5-cleft, inserted at the base of the germen. Caps. 5, each with a nectariferous scale or gland at its base. p. 146.  
 17. SEDUM. Cal. in 5 (sometimes 4—8) deep segments, often resembling the leaves. Pet. 5, patent, inserted at the base of the germen. Caps. 5, each with a nectariferous scale at its base. p. 147.

\*\* *Germen superior, solitary in each flower.*

18. PARIS. Perianth of 10 leaves; 4 inner ones very narrow. Anther-cells attached near the middle of the filament. Germen 5-celled. p. 432.  
 19. OXALIS. Cal. 5-parted. Pet. 5, often united by the bases of their claws. Anthers terminal. Germen 5-celled. Seeds with an elastic skin. — Leaves alternate. p. 87.  
 20. SPERGULA. Cal. 5-leaved. Pet. 5. Germen 1-celled. — Leaves opposite, with membranaceous stipules. p. 145.  
 21. CARYOPHYLLACEÆ. § ALSINEÆ. Cal. 5-leaved. Germ. 1-celled. — Leaves opposite, without stipules. pp. 54, 62.  
 22. CARYOPHYLLACEÆ. § SILENEÆ. Cal. monophyllous, with 5 teeth. Pet. clawed. — Leaves opposite without stipules. pp. 54, 55.

\*\*\* *Germen inferior.*

23. ADOXA. Perianth double. Anthers 1-celled. p. 181.

Class XI. DODECANDRIA. 12 (to 18) stamens.

Ord. I. MONOGYNIA. 1 style.

1. ASARUM. Perianth single, 3-cleft, superior. p. 363.  
 2. LYTHRUM. Cal. inferior, tubular, with 12 teeth alternately smaller. Pet. 6, inserted upon the calyx. p. 139.

Ord. II. DIGYNIA. 2 styles.

3. AGRIMONIA. Cal. turbinate, covered with hooked bristles, 5-cleft, inferior. Pet. 5, inserted upon the calyx. p. 127.

## Ord. III. TRIGYNIA. 3 styles.

4. RESEDA. Cal. 4-6-parted. Pet. more or less divided and unequal. Styles entire. Caps. of 1 cell, open at the top, with many seeds attached to its wall. p. 43.
5. EUTHORBIA. Perianth (a true involucre) single, campanulate. Styles bifid. Caps. 3-celled, with 3 seeds attached to the axis. p. 366.

## Ord. IV. DODECAGYNIA. Styles variable, 4—12 or more.

6. SEMPERVIVUM. Cal. inferior, 12-cleft. Pet. 12, entire, regular. Caps. 12, distinct.—Stipules none. p. 147.
7. POTENTILLA. Cal. inferior, 8—10-cleft, the segments alternately smaller. Pet. 4—5, entire or notched, regular, inserted upon the calyx. Achenes 4—18, distinct.—Leaves with stipules adhering to the petiole. p. 122.
8. STRATIOTES. Perianth superior, 6-parted; 3 outer segments herbaceous, 3 inner petaloid. Germ. 6-celled. p. 412.

## CLASS XII. ICOSANDRIA. 20 or more stamens placed on the calyx.

1. ROSACEÆ. Flowers regular. Cal. 4—5- or 8—10-cleft. —Leaves with stipules. p. 114.
2. STRATIOTES. Perianth 6-parted, regular; 3 outer segments herbaceous, 3 inner petaloid. Germen inferior, 6-celled.—Floating plants. p. 412.

## CLASS XIII. POLYANDRIA. Many stamens inserted upon the receptacle (free from the calyx and petals).

## Ord. I. MONOGYNIA. 1 style.

\* Flowers irregular.

1. DELPHINIUM. Cal. coloured, upper leaflet produced at the base into a spur. Pet. 4; 2 upper ones with appendages included within the spur. p. 12.

\*\* Flowers regular. Petals 4.

2. PAPAVERACEÆ. Cal. of 2 caducous leaves. Fruit a capsule or pod. p. 15.
3. ACTÆA. Cal. of 4 caducous leaves. Berry 1-celled.—p. 13.

\*\*\* Flowers regular. Petals 5.

4. HELIANTHEMUM. Cal. of 3 equal leaves, or 5 of which 2 are exterior and smaller; larger ones twisted in bud. p. 44.
5. TILIA. Cal. 5. partite; leaves similar, valvate in bud. p. 77.

\*\*\*\* *Flowers regular. Petals numerous.*

6. NYMPHÆACEÆ. p. 14.

Ord. II. PENTAGYNIA. *Styles variable, 2—6.*

7. STRATIOTES.<sup>1</sup> Germen inferior, 6-celled. p. 412.
8. RESEDA. Flowers irregular. Germen superior, solitary, 1-celled, soon open at the top between the short styles. Seeds attached to 3, 4 parietal receptacles. p. 43.
9. HYPERICUM. Flowers regular. Germen superior, solitary, closed at the top.—Leaves opposite. p. 78.
10. RANUNCULACEÆ. Germens superior, several (3—6), sometimes united below, each 1-celled.—Leaves alternate. p. 3.

Ord. III. POLYGYNIA. *Many styles.*

11. RANUNCULACEÆ. p. 3.

CLASS XIV. DIDYNAMIA.<sup>2</sup> *4 stamens; 2 longer than the other two.*

Ord. I. GYMnosPERMIA.<sup>3</sup> *Germen or fruit deeply 4-lobed, or apparently of 4 naked seeds. Style from between the lobes.*

1. LABIATÆ. p. 305.

Ord. II. ANGiosPERMIA.<sup>4</sup> *Germen entire, or slightly 2-lobed, containing several seeds, with a terminal style.*

2. VERBENA. Germen superior, 4-celled, with 1 seed at the base of each cell. Fruit splitting into 4 achenes.<sup>5</sup> p. 325.
3. LINNÆA. Germen inferior, 3-celled; 2 of the cells with many abortive seeds, one with a perfect seed. Berry dry, 1-seeded. p. 185.
4. OROBANCHACEÆ. Germen and caps. superior, 1-celled. Seeds attached to parietal receptacles.—Leafless plants. p. 284.

<sup>1</sup> We retain *Stratiotes* in the Class *Polyandria*, solely because it has been placed there by Linnæus, Smith, and some others; but the inferior germen shows its place to be *Icosandria*: there are, however, seldom more than 12 stamens with anthers, so that it ought rather to be looked for in *Dodecandria*, and from its being almost always dioecious, Richard long ago removed it to *Diœcia Dodecandria*.

<sup>2</sup> From *dis*, two, and *dynamis*, a power, or superiority of two stamens over the other two.

<sup>3</sup> From *γυμνος*, naked, and *σπργανα*, the seed.

<sup>4</sup> From *αγγιον*, a vessel or capsule, and *σπργανα*, the seed.

<sup>5</sup> This genus is placed by Smith and others in the order *Gymnospermia*. It is sometimes described as having the seeds inclosed in one thin membranous evanescent pellicle or capsule; but although we have not seen such, the terminal style appears to indicate the order *Angiospermia*.

5. SCROPHULARIACEÆ. Germen and caps. superior, 2- (or rarely 1-) celled. Seeds several, attached to the axis. Leafy plants. p. 288.

CLASS XV. TETRADYNAMIA.<sup>1</sup> 6 stamens, 4 long and 2 short.

1. CRUCIFERÆ. p. 20.

CLASS XVI. MONADELPHIA.<sup>2</sup> Filaments combined in one set.<sup>3</sup>

Ord. I. TRIANDRIA. 3 stamens.

1. \*SISTRHYNCIUM. p. 426.

Ord. II. PENTANDRIA. 5 perfect stamens.

2. GERANIACEÆ. Style 1. Fruit beaked, separating at the base into 5, 1-seeded capsules, each with a long awn. p. 82.  
3. LINUM. Style 5. Fruit not beaked, 10-valved, 10-seeded. p. 73.

Ord. III. DECANDRIA. 10 stamens.

4. GERANIUM. Cor. of 5 regular petals. Style 1. Fruit beaked, separating at the base into 5, 1-seeded capsules, each with a long naked awn. p. 82.  
5. OXALIS. Cor. of 5 regular petals. Styles 5. Fruit 5-celled, not beaked. p. 87.  
6. LEGUMINOSÆ. Cor. irregular, papilionaceous. Style 1. Legume 1-celled. p. 92.

Ord. IV. POLYANDRIA. Many stamens.

7. MALVACEÆ. Cal. double. Anthers 1-celled. p. 75.

CLASS XVII. DIADELPHIA.<sup>4</sup> Filaments combined in two sets.

Ord. I. HEXANDRIA. 6 stamens.

1. FUMARIACEÆ. Cal. of 2 small deciduous leaves. Pet. 4, one of them gibbous or spurred at the base. p. 18.

<sup>1</sup> From τετρας, four, and δυναμις, a power, or superiority in length of four over the other two stamens.

<sup>2</sup> From μωνος, one, and αδελφος, brotherhood; one united set of stamens.

<sup>3</sup> In *Erodium* and *Geranium* the union of the filaments takes place only at the very base, and is with difficulty perceived.

<sup>4</sup> From δις, two, and αδελφος, brotherhood, stamens in two sets.

Ord. II. OCTANDRIA. 8 *stamens*.

2. **POLYGALA.** Cal. of 5 leaves, 2 of them wing-shaped and coloured. Pet. combined by the claws with their filaments, the lower one keeled. Capsule compressed, 2-celled, 2-seeded. p. 52.

Ord. III. DECANDRIA. 10 *stamens*.

3. **LEGUMINOSÆ.** Flowers papilionaceous. p. 92.

CLASS XVIII. POLYADELPHIA.<sup>1</sup> *Filaments combined in more than two sets.*Ord. I. POLYANDRIA. *Many stamens*.

1. **HYPERICUM.** Cal. 5-partite or 5-leaved, inferior. Pet. 5. Stam. inserted on the receptacle. p. 78. \*

CLASS XIX. SYNGENESIA.<sup>2</sup> *Anthers united into a tube. Flowers compound (several together on the same receptacle, and within the same involucre.*

1. **COMPOSITÆ.** p. 196.

CLASS XX. GYNANDRIA.<sup>3</sup> *Stamens situated upon the style or column, above the germen.*Ord. I. MONANDRIA; *one stamen*; and Ord. II. DIANDRIA, *two stamens*.

1. **ORCHIDACEÆ.** Perianth 6-partite, irregular. Germen 1-celled. — Leaves simply veined. p. 413.

Ord. III. HEXANDRIA. 6 *stamens*.

2. **ARISTOLOCHIA.** Perianth tubular, oblique. Germen 6-celled. — Leaves netted-veined. p. 363.

<sup>1</sup> From *πολυς*, *many*, and *ἀδελφος*, *many sets of stamens*.

<sup>2</sup> From *συγγινησις*, implying union of the anthers.

<sup>3</sup> From *γυνή* and *ανη*, implying a union of the stamen and pistil.

CLASS XXI. MONŒCIA.<sup>1</sup> *Stamens and pistils in separate flowers on the same plant.*

Ord. I. MONANDRIA. 1 stamen.

1. EUPHORBIA. Involucre of 1 piece, including several barren flowers and 1 fertile. Perianth none, or a very minute one to the fertile flower. Germen 3-lobed. Styles 3, cleft. Caps. 3-seeded. p. 366.
2. CALLITRICHE. Bractees 2 or none. Perianth none. Germen solitary, 4-lobed, indehiscent, with 4, 1-seeded cells. Styles 2, simple. p. 370.
3. ZANNICHELLIA. Involucre, spathe, and spadix none. Perianth of barren fl. none, of fertile single, of 1 leaf. Germens 4 or more, each with 1 undivided style. p. 472.
4. ZOSTERA. Perianth none. Stamens and pistils inserted alternately in 2 rows upon one side of a thin flat spadix inclosed within a foliaceous spathe. Anthers sessile. Style bifid. Fruit dry. p. 472.
5. ARUM. Perianth none. Stamens inserted about the middle, pistils on the lower part of a thick rounded spadix which is enveloped by a spathe convolute at the base. Fruit fleshy, many-seeded. p. 462.

Ord. II. DIANDRIA. 2 stamens.

6. CALLITRICHE. Flowers solitary. Fruit naked, 4-lobed, 4-seeded. Styles 2, simple. — Leaves opposite, sessile. p. 370.
7. LEMNA. Spadix 0. Spathe urceolate, membranaceous, inclosing one barren and one fertile flower. Ovary 1-celled. Style and stigma 1. — Minute floating, frondose plants. p. 464.
8. CAREX. Flowers in spikes. Fruit 1-seeded, contained within an urceolate membranaceous perigynium. Style 1, with 2, 3 stigmas. — Leaves alternate, sheathing. p. 486.

Ord. III. TRIANDRIA. 3 stamens.

9. CYPERACEÆ. Flowers in spikes, subtended by glumes. Achenes with 1 style and 2, 3 stigmas. — Leaves parallel-veined. p. 474.
10. TYPHACEÆ. Flowers in spikes or capitate, without glumes. Pericarps indehiscent, with 1 style and stigma. — Leaves parallel-veined. p. 460.
11. AMARANTHUS. Perianth single, deeply 3-partite. Styles 2, 3. Utricle of 1 cell, bursting all round transversely, 1-seeded. — Leaves netted-veined. p. 342.

Ord. IV. TETRANDRIA. 4 stamens.

12. LITTORELLA. Barren fl. : Cal. 4-leaved. Cor. 4-fid, scarious.

From *μνος*, one, and *οικος*, a house.

- Stam. much longer than the corolla. — Fertile fl. : Cal. 0 (unless 3 bracteas be so called). Cor. urceolate. Style very long. Fruit 1-seeded. — Leaves radical. p. 339.
13. *ALNUS*. Flowers all in cylindrical catkins. — Barren fl. : Scale of the catkin 3-lobed, with 3 flowers. Perianth single, 4-partite. — Fertile fl. : Scale of the catkin subtrifid, with 2 flowers. Perianth 0. Styles 2. Fruit compressed, 2-celled. — Trees. p. 380.
14. *MYRICA*. Flowers all in cylindrical catkins; scales entire, each with a single flower. Perianth none. Germen 1-celled, 1-seeded. Styles 2. Fruit globose. — Shrubs. p. 378.
15. *BUXUS*. Flowers clustered, axillary. Perianth single, of 4 leaves, 2 opposite ones smaller, with 1—3 bracteas at the base. Styles 3. Caps. with 3 beaks, 3-celled, 6-seeded. — Trees or shrubs. p. 369.
16. *PARIETARIA*.<sup>1</sup> Flowers clustered, axillary. Perianth single, campanulate or tubular, 4-cleft. Style simple. Stigma penicillate. Achene 1-seeded. — Herbaceous plants with leafy stems. p. 374.
17. *URTICA*. Flowers in spikes or clustered. Perianth single, of the barren flowers 4-leaved, of the fertile 2-leaved. Stigma sessile.<sup>2</sup> Achene 1-seeded. — Herbaceous plants, with leafy stems. p. 373.
18. *ERIOCAULON*.<sup>1</sup> Flowers collected into a compact, scaly, stalked head. Perianth single, diaphanous. — Barren flowers in the centre. Perianth 4-cleft, the inner segments united nearly to their summit. — Fertile flowers in the circumference. Perianth deeply 4-partite. Style 1. Stigmas 2. Caps. 2-celled; cells 1-seeded. — Leaves all radical. p. 445.

Ord. V. *PENTANDRIA*. 5 stamens.

19. *XANTHIUM*. Barren fl. : Involucre of few scales, with many small capitate flowers seated upon a common receptacle. Perianth single, obovate, 5-toothed. Anthers terminating a tube, which is inserted into the base of the perianth. — Fertile fl. : Involucre of 1 piece, prickly, 2-beaked, entirely inclosing two 1-seeded pistils, without a perianth. p. 245.
20. *ATRIFLEX*. Perianth single, herbaceous, of the barren flowers 5-partite, of some or all the fertile 2-leaved. Styles 2. Utricle superior, indehiscent, 1-seeded. p. 347.

Ord. VI. *POLYANDRIA*. 6 stamens or more.

\* *Flowers not in catkins.*

† *Flowers destitute of spatha and spadix.*

‡ *Stipules none.*

21. *CERATOPHYLLUM*. Flowers axillary. Perianth (an involucre?)

<sup>1</sup> Usually placed in *Monœcia Hexandria*; but the only British species has 4 stamens, and the other parts of the flower are in a binary ( $\frac{2}{2}$ ), not ternary ( $\frac{3}{3}$ ), proportion.



single, inferior, multipartite. Stam. 16—20. Germen 1, superior. Style filiform and stigma simple. Fruit indehiscent, 1-seeded. p. 371.

22. **MYRIOPHYLLUM.** Flowers axillary or in a lax spike. — Barren fl. : Cal. inferior, of 4 leaves. Pet. 4, deciduous. Stam. 8. — Fertile fl. : Cal. of 4 leaves. Pet. 4. Germen inferior. Stigma 4, sessile. Fruit splitting into 4 achenes. p. 138.

23. **SAGITTARIA.** Flowers solitary, peduncled. Perianth of 6 leaves ; 3 outer herbaceous, 3 inner petaloid. Stam. numerous. Germens very numerous, collected into a head, each with one style and stigma. Achenes compressed. p. 458.

†† *Leaves with stipules adhering to the petiole.*

24. **POTERIUM.** Flowers collected into a head, upper ones fertile. Perianth single; of barren fl. in 4 deep segments, of fertile fl. tubular, and contracted at the mouth with 4 deciduous teeth. Stam. 30—40; filaments very long, flaccid. Germens 2. Stigmas tufted. Achenes 2, invested with the hardened perianth. p. 126.

†† *Flowers with a spathe and spadix.*

25. **ARUM.** Spatha of 1 leaf, convolute at the base. Perianth 0. Spadix thick, naked above, with germens at its base and sessile stamens near the middle. Berry 1-celled, many-seeded. p. 462.

\*\* *Barren flowers in catkins or lax spikes.*

26. **CUPULIFERÆ.** Fertile fl. solitary or aggregated or spiked. Perianth, when present, adhering to the rounded germen. Fruit solitary, or several together within a coriaceous or leafy involucre, not winged. p. 401.
27. **BETULA.** Fertile flowers in cylindrical catkins. Germen and fruit compressed, winged, not contained within an involucre. p. 379.

#### Ord. VII. MONADELPHIA. *Stamens united in one set.*

28. **XANTHIUM.** Barren fl. capitate, seated upon a common receptacle. Perianth single, 5-toothed. Filaments united into a compact tube, inserted into the bottom of the perianth, and bearing 5 anthers at the summit. — Fert. fl. : Involucre of 1 piece, prickly, 2-beaked, inclosing 2, 1-seeded pistils without a perianth. Stigmas protruded. p. 245.
29. **PINUS.** Perianth 0. — Barren fl. in crowded racemose catkins; the scales peltate, bearing 2, 1-celled sessile anthers. — Fertile fl. in an ovate catkin; its scales closely imbricated, 2-flowered, afterwards hardened and forming a cone (*strobilus*). Pericarp none (except the scales of the cone). Seeds terminated by a long winged appendage, placed by pairs on the upper surface of each scale. p. 406.

CLASS DICECIA.<sup>1</sup> *Stamens and pistils in separate flowers and on different plants.*

Ord. I. DIANDRIA. 2 or sometimes 1 stamen.

1. SALIX. Scales of the catkin single-flowered, imbricated, with 1—2 nectariferous glands at the base. Perianth 0. Stigmas 2, often cleft. Caps. 1-celled, 2-valved, many-seeded. Seeds comose. p. 381.

Ord. II. TRI-PENTANDRIA. 3—5 stamens.

\* *Sterile flowers not in catkins, or with a perianth besides the scale of the catkin.*

2. EMPETRUM. Perianth and bracteas of many imbricating scales of which the 3 inner are often regular, spreading, and petaloid. Filaments 3, long, inserted under the germen. Germen superior, globose. Style short. Stigma dilated, peltate, rayed. Fruit fleshy, 6—9-seeded. p. 364.
3. RUSCUS. Perianth single, of 6 leaves. Filaments combined into a tube, bearing 3 anthers at the summit. Style 1, surrounded by a tubular nectary. Stigma 1. Germen superior, 3-celled, 6-seeded. Fruit fleshy. p. 436.
4. VALERIANA. Cor. monopetalous. Stamens 3, upon the corolla. Germen inferior. Style 1. Stigma 3-fid. Fruit dry, 1-seeded, crowned with the calyx expanded into a pappus. p. 192.
5. VISCUM. Cal. obsolete. Pet. 4, of barren fl. ovate, fleshy, united at the base, and bearing each a single anther, adnate with the upper surface; of fertile fl. very minute. Germen inferior. p. 183.
6. RHAMNUS. Perianth double. Cal. urceolate 4-cleft. Pet. 4. Stam. 4, opposite to the petals; filaments inserted upon the throat of the calyx, ovary superior. p. 91.
7. HIPPOPHAE. Barren fl. collected into a small sort of catkin, each scale bearing a flower. Perianth single, of 2 roundish nearly distinct pieces. Anthers 3, linear, sessile. — Fertile fl. solitary. Perianth single, tubular, cloven at the summit. Germen superior. p. 377.
8. URTICA. Perianth single; of the barren fl. 4-leaved, of the fertile 2-leaved. Stam. 4. Stigma 1, sessile. Achene superior. p. 373.
9. HUMULUS. Barren fl. solitary. Perianth single, of 5 leaves. Stam. 5. Anthers with 2 pores at the extremity. — Fertile fl. in catkins, with large persistent concave entire scales. Perianth 0. Germen superior. Styles 2. Achene 1-seeded. p. 375.
10. RIBES. Perianth double. Pet. 5, inserted upon the calyx. Stam. 5. Germen inferior, 1-celled. Style bifid. Berry many-seeded. — Shrubs. p. 50.

<sup>1</sup> From *dis*, two, and *oikos*, a house.

11. **BRYONIA.** Perianth double. Cor. 5-cleft. Stam. of 3 filaments and 5 anthers. Germen inferior. Style 3-fid. Berry several-seeded. — Herbaceous plants with tendrils. p. 141.

**\*\* Barren and fertile flowers in catkins. Perianth 0.**

12. **MYRICA.** Stam. 4. Styles 2. Scales of the fertile catkin at length somewhat fleshy, and adhering to the fruit, which is drupaceous and 1-seeded. p. 378.
13. **SALIX.** Stam. 3—5. Styles bifid. Scales of the ovary always dry or herbaceous, and free from the fruit, which contains many comose seeds. p. 381.

### Ord. III. HEXANDRIA. 6 stamens.

14. **TAMUS.** Perianth single, in 6 deep equal segments. Germen inferior. Stigmas 3. Berry 3-celled. p. 431.
15. **RUMEX.** Perianth single, the 3 inner ones of the fertile fl. afterwards enlarged, and covering the 1-seeded achene. Germen superior. p. 357.

### Ord. IV. POLYANDRIA. 8 stamens or more.

**\* Flowers in catkins.**

16. **PORULUS.** Anthers 8—30, arising from a turbinate, oblique, entire, single perianth. Caps. superior, 2-valved, with many comose seeds. p. 399.

**\*\* Flowers scattered.**

17. **SEDUM.** Cal. 4-partite. Pet. 4. Glands 4, emarginate. Stam. 8. Germens 4. p. 147.
18. **MERCURIALIS.** Perianth single, 3-partite. Stam. 9—12. Anthers of 2 globose lobes. Germen superior. Styles 2. Caps 2-celled, 2-seeded. p. 365.
19. **CARYOPHYLLACEÆ.** Cal. tubular and 5-toothed, or 5-partite. Pet. 5. Stam. 10. Germen superior, several-seeded, Styles 3—5.—Leaves opposite, without stipules — (**SILENE, LYCHNIS, HONCKENYA**). p. 54.
20. **ROSACEÆ.** Cal. 5—10-cleft. Pet. 5. Stam. numerous, inserted on the calyx. Styles numerous. Achenes or drupes many, superior, seated upon an elevated receptacle. — Leaves alternate, with adnate stipules — (**FRAGARIA** and **RUBUS**). p. 114.
21. **HYDROCHARIDACEÆ.** Flowers spathaceous. Perianth 6-partite, or of 6 pieces: 3 outer herbaceous, 3 inner petaloid. Stam. 9—12, or more. Germen inferior. Styles 3—6. — Floating plants. p. 411.

### Ord. V. MONADELPHIA. Stamens combined in one set.

**\* Perianth 6-leaved. Flowers not in catkins.**

22. **RUSCUS.** Flowers on the leaves. Style and stigma 1. Berry 3-celled. p. 436.

**\*\* Perianth none. Barren flowers in catkins.**

23. **SALIX.** Fertile fl. in catkins. Style 1. Stigmas 2. Caps. 2-valved, with many comose seeds. p. 381.
24. **JUNIPERUS.** Style and stigma 0. Seeds about 3, inclosed within several fleshy and at length united scales. p. 407.
25. **TAXUS.** Style and stigma none. Seed solitary, bony, contained in a fleshy cup. p. 407.

**Ord. VI. POLYADELPHIA.** *Stamens combined in 3 (or more) sets.*

26. **BRYONIA.** Filaments (or sets of stamens) 3; anthers 5. Fruit inferior, fleshy. p. 141.

**CLASS XXIII. POLYGAMIA.<sup>1</sup>** *Stamens and pistils separated or united, on the same or on different plants, and having the perianth (of some or all) of the pistillate flowers different from that of the sterile ones.*

**Ord. I. MONŒCIA.** *The two kinds of flowers on the same plant.*

1. **ATRIPLEX.** Barren and united fl.<sup>2</sup> Perianth single, 5-partite. Pistillate fl. Perianth single, of 2 valves. Fruit superior, 1-seeded, covered by the enlarged perianth. — p. 347.

**CLASS XXIV. CRYPTOGRAMIA.<sup>3</sup>** *Stamens and pistils not evident.*

This class corresponds with the third class of the natural arrangement, **ACOTYLEDONES**, which see, p. 563.

<sup>1</sup> From *πολυς*, *many*, and *γαμος*, in allusion to the stamens and pistils being sometimes separated in the same or in different plants.

<sup>2</sup> The supposed united fl. are by some considered to be only a second kind of pistillate flowers, and to be without fertile stamens, which would remove this genus to **MONŒCIA**.

<sup>3</sup> From *κρυπτος*, *concealed*, and *γαμος*, in reference to the obscure mode of fructification.

## ADDITIONS AND CORRECTIONS.

- Page Line
2. 4. For "BALSAMACEÆ" read "BALSAMINACEÆ."
22. 17. For "BERTERIA" read "BERTEROA."
- 19. For "col." read "cot."
45. 1. For "*Ælandicus*" read "*(Elandicus)*."
47. *Viola pumila*.—With this Mr. Babington, in Bot. Gazette (1850), p. 143, under the name of *V. canina*, conjoins, as a narrow-leaved variety, the *V. lactea* Sm. or *V. lancifolia* Thore; but he keeps distinct what we and most others call *V. lactea* under the name of *V. stagnina* Kit. In our *V. pumila* the spurs of the anthers are usually "three times as long as broad," in *V. stagnina* "not twice as long as broad," — characters, in our opinion, of little value, unless accompanied by a difference of habit.
48. 32. For "like" read "in."
71. 21. After "calyx" add "to twice as long."
73. 15. For "styles mostly 5" read "styles mostly 3."
76. 8. from bottom. After "*M. verticillata* L." add "; E. B. S. t. 2953."
130. 19. After "*ad calcem*" add "*R. Borreri* Sm.; E. B. S. t. 2723."
140. 16. from bottom. For "TAMARISCACEÆ" read "TAMARICACEÆ."
179. 10. For "Forster" read "Forbes."
203. 24. For "*onc entire*" read "*an outer*."
204. 3. After "225" add *Achyrophorus Scop.*
242. 21. Delete "*Matricaria L.*"
254. 19. from bottom. After "ERICACEÆ," add "Juss." •
264. 17. After "APOCYNACEÆ" add "Juss."
341. 7. from bottom. After "1—3-seeded" add "1—3 together within a coriaceous or leafy involucre."
- 5. from bottom. After "membranous" add "without an involucre."
342. 14. After "AMARANTHACEÆ" add "Juss."
343. 9. After "CHENOPODIACEÆ" add "*Ventn.*"
359. *Rumex palustris* — Mr. Babington, in Bot. Gazette (1849), p. 297, is of opinion that there are two species under this name: the one, Smith's plant, to which he refers as synonyms *R. maritimus* Curt. and *R. Steerii* Koch; the other *R. palustris* Koch, or *R. limosus* Thuill., to which he refers the "Golden Dock" of Petiver; this last is said to have the leaves all linear lanceolate as in *R. maritimus*, but the whorls distant as in *R. palustris*: to *R. palustris* he attributes root-leaves narrowly lanceolate from a rounded or cordate or slightly decurrent base. No station is, however, now known in this country for *R. limosus*, if such, indeed, was Petiver's plant.
449. 24. and 28. For "*lampocarpus*" read "*lamprocarpus*."
450. 17. For "*lampocarpus*" read "*lamprocarpus*."
472. 27. For "longest-stalked" read "longish-stalked."
480. 21. For "*E. B. t. 1693*" read "*Scirpus E. B. t. 1693*."!
520. 2. For "*E. B. t. 2265*" read "*E. B. t. 2265: Parn. Gr. t. 7.*"

# THE BRITISH FLORA.

## ARRANGEMENT ADOPTED IN THE BRITISH FLORA.

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<b>I. DICOTYLEDONOUS, OR EXOGENOUS, PLANTS,</b>	1
1. THALAMIFLORÆ, petals several, distinct, and the stamens hypogynous	1
2. CALYCIFLORÆ, corolla and stamens perigynous, or inserted into the calyx	88
A. POLYPETALOUS, petals distinct	90
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3. COROLLIFLORÆ, corolla of one piece, hypogynous, stamens epipetalous or hypogynous	253
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4. MONOCHLAMYDÆ, perianth single or wanting	340
 <b>II. MONOCOTYLEDONOUS, OR ENDOGENOUS PHANEROGAMOUS PLANTS</b>	 408
1. PETALOIDEÆ, flowers having a single perianth, or if destitute of one, naked	409
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2. GLUMACEÆ, flowers destitute of a perianth, but inclosed within imbricated alternate chaffy scales or bracteas	473
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# BRITISH FLORA.

## CLASS I.

### DICOTYLEDONOUS<sup>1</sup>, OR EXOGENOUS, PLANTS.

Cellular and vascular. *Stem* formed of two distinct portions, *Wood* and *Bark*; the former containing pith in the centre, from which diverge the *medullary rays*, and increasing by new layers on the outside; the latter by new layers within. *Leaves* with the nerves much branched, and the veinlets reticulated. *Flowers* having the parts usually arranged in a quinary or quaternary manner. *Embryo* with two opposite *cotyledons*, rarely more and then verticillate.

#### SUB-CLASS I. THALAMIFLORÆ. (ORD. I.—XXIII.)

*Petals many, distinct, and, as well as the stamens, inserted upon the receptacle (not upon the calyx); hence hypogynous* (from ὑπο, beneath, and γυνή, the pistil).

#### CONSPECTUS OF THE ORDERS.<sup>2</sup>

##### A. *Flowers very irregular.*

##### a. *Leaves with stipules, ovary 1-celled.* s

9. VIOLACEÆ. Stamens 5; anthers with a crest, more or less cohering. Ovary with 3 parietal placentas.

[26. LEGUMINOSÆ. Stamens 10, mono-diadelphous; anthers distinct. Placenta 1, sutural.]

<sup>1</sup> From δι-, twice or double, and κοτυληδών the cotyledon.

<sup>2</sup> The orders printed within brackets will be found described at length in some other sub-class, although some genera or species belong in character to the present one. On the other hand, the perigynous and apetalous genera and species will be noticed in the conspectus of some other sub-class. A similar remark applies to all the sub-classes.



b. *Leaves without stipules.*

- 5. FUMARIACEÆ. Stamens 6, diadelphous. Fruit 1-celled.
- 11. POLYGALACEÆ. Stamens 8, diadelphous. Fruit 2-celled.
- 21. BALSAMACEÆ. Stamens 5; filaments distinct; anthers cohering. Fruit 5-celled.
- 7. RESEDACEÆ. Stamens 10 or more, inserted on a glandular irregular disk. Fruit 1-celled, with 8 parietal placentas.
- 1. RANUNCULACEÆ. Stamens numerous, without any conspicuous disk. Fruit of 1—5 follicles, each with one sutural placenta.

B. *Flowers regular, or nearly so.*a. *Stamens 20 or more.*

- 1. RANUNCULACEÆ. Stamens distinct. Carpels 1 or more, sometimes cohering below, each with 1 style and 1 placenta. Leaves alternate.
- 4. PAPAVERACEÆ. Sepals 2, caducous. Petals 4. Style 1. Placentas 2 or more. Leaves without stipules.
- 3. NYMPHÆACEÆ. Sepals 4—6. Petals numerous. Stamens distinct. Style 1. Stigma rayed. Placentas several.
- 8. CISTACEÆ. Sepals 3, twisted in aestivation, with usually 2 outer ones. Petals 5, fugacious. Style 1. Placentas several.
- 18. HYPERICACEÆ. Sepals 5. Petals 5. Styles several (3—5). Leaves opposite, without stipules.
- 17. TILIACEÆ. Sepals 4—5, all in the same whorl and valvate in aestivation. Petals 4—5. Stamens distinct. Style 1. Placentas several. Leaves with stipules.
- 16. MALVACEÆ. Calyx valvate in aestivation. Petals 5. Stamens united into a column. Leaves with stipules.

b. *Stamens 12 or fewer. Calyx tubular.*

- [67. PLUMBAGINACEÆ. Stamens as few as the petals, opposite to them and attached to their claws. Styles 5. Ovary 1-celled, with 1 ovule.]
- 12. FRANKENIACEÆ. Stamens, if as few as the petals, alternate with and free from them. Style 1, 2—3-cleft. Ovules several, attached to 3 parietal placentas.
- 14. CARYOPHYLLACEÆ, § SILENEÆ. Stamens twice as many as the petals. Styles 2—5. Ovules numerous, attached to a central or axile placenta.

c. *Stamens 12 or fewer. Calyx deeply divided, or sepals distinct.*\* *Carpels several, distinct.*

- 1. RANUNCULACEÆ. Carpels very numerous, in several rows.
- [35. CRASSULACEÆ. Carpels in a single row.]

\*\* *Carpels in a single row, solitary, or 2—5 combined.*

† *Ovary 1-celled, with a free central placenta bearing 3 or more ovules. Anthers not opening by recurved valves.*

- [33. PORTULACEÆ. Sepals 2. Petals 5.
- 34. PARONYCHIACEÆ. Sepals and petals 4—5. Leaves with stipules.]
- 14. CARYOPHYLLACEÆ, § ALSINEÆ. Sepals and petals 4—5. Leaves without stipules.

†† *Placentas several, parietal, or cells of fruit 1-seeded. Anthers not opening by recurved valves.*

[31. TAMARICACEÆ. *Placentas 3. Seeds comose.*]

10. DROSERACEÆ. *Placentas 3—4. Seeds not comose.*

6. CRUCIFERÆ. *Placentas 2, or apparently only 1. Style 1. Stamens usually tetradynamous.*

††† *Ovary 1-celled, with 1 placenta. Anthers opening by recurved valves.*

2. BERBERIDACEÆ.

†††† *Ovary with 2 or more cells and axile placentas.*

§ *Petals imbricated in aestivation.*

19. ACERACEÆ. *Style 1, bifid. Fruit 2-celled, 2—4-seeded, winged. Leaves opposite, exstipulate.*

23. STAPHYLEACEÆ. *Stamens 5, inserted below the margin of a large hypogynous disk. Styles 2—3. Ovary and wingless fruit 2—3-celled. Seeds globose, few, bony. Leaves pinnatifid, stipuled.*

[37. SAXIFRAGACEÆ. *Stamens 10. Styles 2. Ovary 2-celled. Fruit many-seeded, wingless. Leaves without stipules.*

51. PYROLACEÆ. *Stamens 8—10; anthers opening by pores. Style and stigma 1. Ovary 4—5-celled, many-ovuled. Leaves without stipules.*

52. MONOTROPACEÆ. *Stamens 8—10; anthers opening transversely. Style and stigma 1. Ovary 4—5-celled, many-ovuled. Leaves wanting.]*

13. ELATINACEÆ. *Styles 3—5. Ovary and fruit 3—5-celled. Seeds numerous, cylindrical, with a striated testa. Leaves entire, opposite, stipuled.*

§§ *Petals convolute in aestivation.*

15. LINACEÆ. *Stamens 4—5. Stigmas 3—5. Ovary 3—5-celled. Fruit 6—10-celled, 6—10-seeded. Leaves exstipulate, entire.*

22. OXALIDACEÆ. *Stamens 10. Styles 5. Ovary 5-celled. Seed-coat fleshy, bursting elastically. Leaves alternate, exstipulate.*

20. GERANIACEÆ. *Stamens 10. Style 1. Stigmas 5. Ovary 5-celled. Fruit 5-celled, 5-seeded, with a long beak. Leaves stipuled.*

## ORD. I. RANUNCULACEÆ Juss.

*Calyx* of mostly 5, rarely 3 or 6, pieces or sepals, frequently deformed. *Petals* 5 or more, often deformed, sometimes wanting. *Stamens* usually numerous, rarely as few as the petals, and then alternate with them. *Anthers* adnate, mostly reversed. *Ovaries* 1 or many, distinct or cohering. *Fruit* mostly of several 1-seeded indehiscent *carpels* (*achenes*), or of 1 or more distinct or united *capsules* dehiscing along their inner margin (*follicles*), rarely a *Berry*. *Embryo* straight, in the base of a horny *albumen*. — Herbs or shrubs. *Leaves often divided, with more or less dilated stalks. Acid and poisonous, some of them eminently so, especially Aconitum.*

\* *Ovaries numerous, short, in several rows, 1-ovuled. Fruit of achenes.*

1. CLEMATIS. Calyx valvate or induplicate in æstivation. Petals 0.
2. THALICTRUM. Calyx imbricated in æstivation. Petals 0. Involucre 0.
3. ANEMONE. Calyx imbricated in æstivation. Petals 0. Involucre 3-leaved, usually distant from the calyx.
4. ADONIS. Petals 5—10, without a nectariferous pore.
5. MYOSURUS. Sepals prolonged at the base. Petals 5, with a nectariferous pore.
6. RANUNCULUS. Sepals not prolonged at the base. Petals with a nectariferous pore.

\*\* *Ovaries elongated, many-ovuled.\* Carpels several-seeded. Stamens numerous.*

† *Stamens not arising from a glandular disk: anthers reversed (extrorse). Fruit of follicles.*

7. CALTHA. Petals 0.
8. TROLLIUS. Petals linear, flat.
- 8<sup>a</sup>. ERANTHIS. Petals small, tubular. Follicles stalked.
9. HELLEBORUS. Petals small, tubular. Follicles sessile.
10. AQUILEGIA. Petals 5, funnel-shaped, with a long spur.
11. DELPHINIUM. Upper sepal spurred at the base. Petals 4, irregular.
12. ACONITUM. Upper sepal helmet-shaped. Petals irregular.

†† *Stamens arising from a glandular disk: anthers introrse. Carpel solitary, baccate.*

13. ACTÆA. Petals 4, irregular.

††† *Stamens arising from a glandular disk: anthers introrse. Follicles 2—5.*

14. PEONIA. Petals 5—10, larger than the calyx, regular.

\* *Ovaries (and fruit) short, 1-seeded. (Gen. 1—6.)*

### 1. CLÉMATIS Linn. Traveller's Joy.

*Cal.* of 4—6 sepals, with a valvate or induplicate æstivation. *Pet.* 0. *Stamens* and *Styles* numerous. *Achenes* terminated by a long, mostly feathery, awn.—Named from κλημα, the shoot of a vine, which the long branches somewhat resemble.

1. C. *Vitalba* L. (common T.); stem climbing, leaves pinnate, leaflets cordato-ovate inciso-lobate, petioles twining, peduncles rather shorter than the leaves. *E. B.* t. 612.

Hedges; abundant in a calcareous soil, in the middle and south of England. *h.* 6—9. — *Petioles* serve as tendrils. *Flowers* fragrant.

### 2. THALICTRUM Linn. Meadow-Rue.

*Cal.* of 4—5 sepals, imbricated in æstivation. *Cor.* 0. *Stamens*

numerous. *Styles* several. *Achenes* without awns (sessile, or nearly so, ribbed, usually acute at both ends, and *flowers* perfect, in the British species). *Involucre* none.—Named from *σαλλω*, to be green or flourishing.

1. *T. alpinum* L. (*alpine M.*); stem simple nearly leafless, raceme simple terminal, flowers drooping. *E. B.* t. 262.

Mountains in the north of England, Wales, and Scotland, frequent. 4. 6, 7. — *Root-leaves* upon long stalks, biternate; *leaflets* roundish, crenate, or lobed, dark-green. *Stam.* 10—12. *Ovaries* 2—4. *Flowers* few. *Pedicels* in fruit recurved: they are straight in the two following.

2. *T. minus* L. (*lesser M.*); glabrous or slightly pubescent, leaves 3—4-pinnate, leaflets roundish or wedge-shaped trifid and toothed glaucous beneath, panicle diffuse its branches alternate or whorled, flowers mostly drooping. — *α.* glabrous, leaflets roundish. *E. B.* t. 11. — *β.* segments of the leaflets much acuminate. *T. nutans* Desf. — *γ.* *majus*, stem often hollow, leaflets larger and broader. *T. majus* Jacq.: *E. B.* t. 611. — *δ.* slightly pubescent. *T. calcareum* Ball Bot. Gaz. i. p. 312.

Stony pastures, especially in limestone or chalky countries. Sand-hills on the coast, near S. Shields and Yarmouth. — *β. γ.* principally in the north of England and in Scotland. *δ.* Ben Bulbin in Sligo, Ireland. 4. 6, 7. — *Stem* usually zigzag, from one to two feet high, mostly glaucous, solid, or hollow particularly when luxuriant. *Achenes* oblong-fusiform, with 8 ribs and occasionally 2 accessory ones. *T. saxatile*, *Kochii*, *flexuosum*, and several others, are mere forms of this, of which *T. pubescens*, *fetidum*, &c., appear to be the pubescent or glandular state.

3. *T. flavum* L. (*common M.*); stem erect branched furrowed, leaves bipinnate, leaflets broadly obovate or wedge-shaped trifid, panicle compact subcorymbose, flowers erect. *E. B.* t. 367. — *β.* leaflets almost rotundate.

Banks of rivers and ditches and in moist meadows. Less frequent in Scotland, and principally found in the vale of Clyde. — *β.* Isle of Bute. 4. 6, 7. — *Stem* 2—3 ft. high. *Flowers* very numerous, yellow. Lobes of the leaves varying in breadth.

### 3. ANEMONE Linn. Anemone.

*Involucre* of 3 divided leaves, more or less remote from the flower. *Cal.* petaloid, of 5—9 sepals, imbricated in æstivation. *Cor.* 0. *Stamens* and *Styles* numerous. *Achenes* pointed or awned.—Named from *ανεμωνη*, and that from *ανεμος*, the wind; because the flowers are easily moved by the wind.

1. *A. Pulsatilla* L. (*Pasque-flower A.*); leaves as well as the involucre with doubly pinnatifid linear segments, flower inclined, sepals 6, achenes with long feathery awns. *E. B.* t. 51.

Dry chalky pastures, in several parts of England. 4. 4, 5. — *Flowers* purple, externally silky, very handsome.

2. *A. nemorósa* L. (*Wood A.*); leaves ternate, leaflets lanceolate lobed and cut, involucre similar to them petiolate, stem single-flowered, sepals 6 elliptical, point of achenes not feathery. *E. B. t.* 355.

Moist woods and pastures, and on high mountains. 4. 3—6. — *Flowers* white, tinged with purple outside.

3. *A. \*Apennína* L. (*Blue Mountain A.*); leaves triternate, segments lanceolate cut and toothed, involucres petiolate ternate and cut, sepals 12—14, point of achenes not feathery. *E. B. t.* 1062.

Wimbledon woods, Surrey; near Harrow; Luton Hoe, Bedfordshire; near Berkhamstead, Essex; and Cullen, Banff. 4. 4. — *Flowers* light and bright blue.

4. *A. \*ranunculoídes* L. (*yellow Wood A.*); leaves ternate, leaflets subtrifid cut and toothed, involucres shortly stalked ternate cut and toothed, sepals 5—6 elliptical, point of achenes not feathery. *E. B. t.* 1484.

Woods, rare; King's Langley, Herts; and Wrotham, Kent. 4. 4. — *Flowers* brightish-yellow.

#### 4. *ADÓNIS* Linn. Pheasant's Eye.

*Cal.* of 5 sepals. *Pet.* 5—10, without a nectary. *Stamens* and *Styles* numerous. *Achenes* without awns. — Name: its deep red colour suggested the idea of its being stained by the blood of *Adonis*.

1. *A. \*autumnális* L. (*Corn P.*); petals concave connivent scarcely longer than the glabrous calyx, achenes reticulated collected into an ovate head, stem branched. *E. B. t.* 308.

Amongst corn, about London, Isle of Wight, Norfolk, Gloucestershire, Glasgow, and Dublin. ☉. 5—7, and partially till autumn. — *Leaves* thrice compound, with linear segments. *Petals* bright scarlet.

#### 5. *MYOSÚRUS* Linn. Mouse-tail.

*Cal.* of 5 sepals, prolonged at the base, imbricated in æstivation. *Pet.* 5, their *claws* tubular (nectariferous). *Stamens* 5. *Achenes* numerous, collected upon a very long columnar receptacle. — Name *μυς*, *μυος*, a *mouse*, and *ουρα*, a *tail*; from the elongated receptacle of the germens or seed-vessels.

1. *M. mínimus* L. (*common M.*) *E. B. t.* 485.

Corn-fields and waste places in England, in a gravelly or chalky soil. North of Ireland. ☉. 4—6. — A small plant, from 2—6 inches in height. *Leaves* erect, narrow, linear-spathulate, fleshy.

*Scapes* slender, bearing a single, small, greenish flower. *Receptacle* of *achenes* at first short, then lengthening to from 1—3 inches.

# 6. RANUNCULUS Linn. Crowfoot, Spearwort.

*Cal.* of 5 (rarely 3) sepals, not prolonged at the base. *Pet.* 5 (rarely many), with a nectary at the base. *Achenes* without awns. [In the pore or nectary of the petals of this, and of *Myosurus*, we observe an affinity with the tubular petals of *Helleborus*, and even of *Trollius*; only, in the two latter, the petals are more altered in shape.] — Named from *Rana*, a *frog*; these plants delighting to grow where frogs abound.

\* *Achenes* conspicuously transversely wrinkled. *Petals* white; nectary without a scale.

1. *R. fluitans* Lam. (*River C.*); stem floating, leaves all submersed capillaceo-multifid, their segments very long and parallel, petals obovate much larger than the calyx, receptacle of fruit hispid. *E. B. S.* t. 2870.

Lakes, rivers, and canals, in deep water.  $\mathcal{U}$ . 6, 7.

2. *R. circinatus* Sibth. (*rigid-leaved Water C.*); stem floating, leaves all submersed flat roundish capillaceo-multifid their segments spreading all in the same plane, petals obovate much larger than the calyx, receptacle of fruit hispid. *E. B. S.* t. 2869.

Lakes, ponds, and ditches.  $\mathcal{U}$ . 6—8. — Whatever be thought of the last species we cannot believe this to be distinct from the following; and whenever the segments of a multifid leaf are not in the same plane, they may be regarded as in an accidental or abnormal state.

3. *R. aquatilis* L. (*common Water C.*); stem floating submersed, leaves capillaceo-multifid, their segments spreading in all directions and forming a globular mass, floating leaves trifid or tripartite (occasionally wanting) their lobes cut or crenated, stipule-like appendages of upper leaves adhering to the petiole, petals obovate much larger than the calyx, receptacle of fruit hispid. —  $\alpha$ . floating leaves present, submersed leaves rarely absent. *E. B.* t. 101. —  $\beta$ . floating leaves absent. *R. panto-*  
*thrix*,  $\alpha$ . *De C.*

Lakes, ponds, and ditches.  $\mathcal{U}$ . *Fl.* Spring and summer. — We have seen no British specimens without the submersed leaves, but they are said to be occasionally wanting abroad; so that this chiefly differs from the next by the larger flowers.

4. *R. tripartitus* DC. (*three-lobed Water C.*); stem floating, submersed leaves wanting or divided into capillary segments spreading in all directions, floating ones tripartite, their lobes

triangular-obovate 2—4-cleft, stipule-like appendages of upper leaves almost free from the petiole, petals oblong (small) as short as or twice as long as the calyx, receptacle of fruit hispid. *E. B. S. t.* 2946.

Shallow ditches near Claremont House, Surrey; *H. Watson*. Haverfordwest, Pembrokeshire; *C. C. Babington*. 4, or ☉? (*Borrer*.) 6, 7. — *Stamens* few, 5—10. *Submersed leaves* always absent in English specimens. In deference to our friend Mr. *Borrer's* opinion, we have kept these three last species distinct: we ourselves, however, are not convinced that the differences hitherto observed are of more importance than to denote *perhaps* permanent varieties: the present one has small flowers and forms the transition to the two next, from which, along with all the preceding, it differs by the hispid receptacle. De Candolle himself was very doubtful as to its claims to rank as a species.

5. *R. cœnósus* Guss. (*Mud C.*); stem creeping or floating, leaves roundish kidney-shaped with 3—5 notched lobes, petals oblong about twice longer than the calyx, receptacle of the fruit glabrous. *R. Lenormandi* *F. W. Schultz*: *E. B. S. t.* 2930.

Shallow water in various places in England; Sussex, Plymouth, Surrey, Needham Forest in Staffordshire, Charnwood Forest in Leicestershire, and head of Coniston Water in Lancashire. Dumfries-shire in Scotland. 4. 6—8. — The *style* is said to be terminal in this species, lateral in the next: this is sometimes true, but is certainly not constant; and we cannot discover any other good grounds for keeping it distinct; although all those who have seen the plant growing appear confident of its being a good species. We do not possess specimens of Gussone's plant, and adopt that name at the suggestion of Mr. *Borrer*.

6. *R. hederáceus* L. (*Ivy C.*); stem submersed and throwing out roots or creeping, leaves roundish kidney-shaped with 3—5 rounded entire lobes, petals (small) narrow scarcely longer than the calyx or sometimes twice as long, stamens 5—12, receptacle of fruit glabrous. *E. B. t.* 2003.

Wet places, shallow pools of water, and where water has stood. 4. *F.* throughout the summer. — With regard to this and the five preceding species, M. Seringe, to whom most of them were well known, and who had studied them closely, long ago recorded his decided opinion, that all were mere varieties. We have not found the characters taken from the receptacle to vary, but we dare not assert that it does not, since we know that the hairiness of the achenes of *R. aquatilis* certainly does, and the hairiness is merely a continuation of that of the receptacle.

\*\* *Achenes* not transversely wrinkled. *Petals* white; *nectary* without a scale.

7. *R. \* alpestris* L. (*alpine white C.*); leaves glabrous, radical ones petiolate orbicular more or less 3—5-lobed, lobes at the

extremity crenate, stem-leaves 1—2 sessile simple linear or deeply divided into 3—5 simple linear segments, stem mostly 1-flowered, petals obcordate. *E. B. t.* 2390.

"By little rills and among rocks on the mountains of Clova, Angus-shire, seldom flowering." *G. Don*, 1809. *¶*. 5. — Stem 3—6 inches high. A very doubtful native: the specimen sent to Smith appears to have been from Don's garden.

\*\*\* *Achenes not transversely wrinkled or obscurely so. Flowers yellow; nectary with a small scale.*

† *Leaves undivided.*

8. *R. Lingua* L. (*great S.*); leaves lanceolate subserrated sessile semiamplexicaul, stem erect glabrous, achenes minutely pitted with a broad ensiform beak. *E. B. t.* 100.

Marshes, sides of lakes, and ditches; not very general. *¶*. 7—9. — Stem 2—3 feet high. *Flowers* large, handsome.

9. *R. ophioglossifolius* Vill. (*Serpent's-Tongue S.*); leaves oblong sessile, lower ones cordato-ovate petiolate, stem erect many flowered, achenes obliquely ovate with a short point margined, the sides tubercled. *E. B. S. t.* 2835.

St. Peter's Marsh, Jersey; *Mr. C. C. Babington*. *¶*. 6. — A very distinct species, allied in the foliage to the following, but in its annual duration and the achenes to *R. hirsutus*. *Flowers* small; heads of fruit large in comparison.

10. *R. Flammula* L. (*lesser S.*); leaves linear-lanceolate nearly entire petiolate, the lower ones ovato-lanceolate, stem decumbent at the base and rooting, achenes minutely pitted or smooth with a short or sometimes subulate point. *E. B. t.* 387. — *β*. much smaller, stem creeping filiform. *R. reptans Lightf. Scot. p.* 289. *t.* 1.

Sides of lakes and ditches, abundant. — *β*. Margins of the Highland lakes, in barren stony places. *¶*. 6—8.

11. *R. \*gramineus* L. (*grassy C.*); leaves linear-lanceolate striated entire, stem erect glabrous, scale of the nectary tubular, achenes irregularly wrinkled with a short recurved point, root fascicled. *E. B. t.* 2306.

"Brought from North Wales by Mr. Pritchard." *With. ¶*. 5, 6.

12. *R. Ficaria* L. (*Pilewort C., lesser Celandine*); leaves cordate petiolate angular or crenate, sepals 3, petals 9, achenes smooth blunt. *E. B. t.* 584. *Ficaria ranunculoides De C.*

Pastures, woods, bushy places, &c. *¶*. 3—5. — Root consisting of many long fasciculated tubers. *Leaves* petiolate, 2—3 on the 1-flowered stem. *Flowers* glossy, yellow.



†† *Leaves divided. Achenes smooth or wrinkled. Perennial.*

13. *R. auricomus* L. (*Wood C.*); leaves glabrous, radical ones reniform 3-partite and cut, stem-leaves divided to the base into linear subdentate segments, calyx pubescent shorter than the petals, head of fruit globose, achenes downy. *E. B.* t. 624

Woods and coppices, not unfrequent 4. 4, 5.—Not acrid, as most of the other *Crowfoots*.

14. *R. scelerátus* L. (*Celery-leaved C.*); leaves glabrous, radical ones petiolate tripartite, lobes cut very obtuse, upper ones in 3 linear cut segments, calyx glabrous, achenes slightly wrinkled collected into an oblong head, receptacle hairy. *E. B.* t. 681.

Sides of pools and ditches. 4. 5—9.—*Stem* short, succulent, 1—2 feet high. *Lower leaves* very broad and glossy. *Flowers* extremely small, pale yellow.

15. *R. ácris* L. (*upright Meadow C.*); calyx spreading, peduncles rounded (not furrowed), leaves tripartite their segments acute trifid and cut, upper ones linear, achenes and receptacle glabrous. *E. B.* t. 652.

Meadows, pastures, and mountainous situations. 4. 6, 7.

16. *R. répens* L. (*creeping C.*); calyx spreading, flower-stalks furrowed, scions creeping, leaves with 3 petiolated leaflets which are 3-lobed or 3-partite and cut, achenes collected into a globose head glabrous, receptacle hairy. *E. B.* t. 515.

Pastures, too frequent. 4. 5—8.—Well distinguished by its creeping scions, and furrowed peduncles.

17. *R. bulbósus* L. (*bulbous C.*); calyx hairy reflexed, peduncles furrowed, stem upright many-flowered, leaves cut into 3 petiolate leaflets which are 3-lobed or 3-partite and cut, root bulbous, achenes smooth, receptacle hairy. *E. B.* t. 515.

Meadows and pastures, frequent. 4. 5, 6.—*Stem* 1 ft. high, hairy. Lobes of the lower leaves subovate; upper leaves with linear segments.

††† *Leaves divided. Achenes tuberculated or muricated. Annual.*

18. *R. hirsútus* Curt. (*pale hairy C.*); calyx reflexed, stem erect many-flowered hairy, leaves 3-lobed or 3-partite, lobes obtuse cut, root fibrous, achenes margined and tuberculated near the margin. *E. B.* t. 1504. *R. Philonotis Ehrh.*

Meadows and waste ground. ☉. 6—9.—Varying extremely in size. When very small it is *R. parvulus* L.

19. *R. arvénsis* L. (*Corn C.*); calyx spreading, stem erect many-flowered, leaves 3-cleft their lobes generally again 3-cleft

into linear entire or bi-tridentate segments, achenes margined muricated. *E. B. t.* 135.

Corn-fields. ☉. 5—7. — *Achenes* very large and prickly. *Flowers* small, pale yellow. — Said to be extremely injurious to cattle.

20. *R. parviflorus* L. (*small-flowered C.*); stem spreading, leaves hairy 3-lobed and cut, peduncles opposite the leaves, calyx as long as the petals, achenes muricated. *E. B. t.* 120.

Corn-fields about London, Norwich, and in the S. and S. W. of England. Chelmsford. Hackfall. Ormeshead. Cork. Sand-hills between Baldoyle and Howth, Dublin. ☉. 5—8. — Well distinguished by its spreading *stems*, lateral *flower-stalks*, and small narrow *petals*, one or two of which are often wanting.

\*\* *Ovaries* (and fruit) elongated, many-seeded. *Stamens* numerous. (Gen. 7—14.)

### 7. CÁLTHA Linn. Marsh-Marygold.

*Sepals* 5, petaloid. *Pet.* none. *Follicles* 5—10, compressed, spreading, with many seeds. — Named from *καλαθος*, a *cup*, which its flowers resemble.

1. *C. palústris* L. (*common M.*); stem erect rooting or creeping, leaves orbiculari-cordate or reniform crenate, calyx-leaves 5—6 oval deciduous. *E. B. t.* 506. —  $\beta$ . leaves cordato-triangular sharply crenate. *C. radicans* Forst.: *E. B. t.* 2175.

Marshy places, common. —  $\beta$ . Scotland?  $\gamma$ . 3—6. —  $\beta$  is only known, and in our opinion has never been known, except as a garden variety: what is usually taken for it is a small state of  $\alpha$ , common in mountainous situations, and which is the *C. minor* of Miller's Dict.

### 8. TRÓLLIUS Linn. Globe-flower.

*Sepals* 5, or many, coloured. *Pet.* 5 or many, small, linear, flat, with an obscure depression above the contracted base. *Stamens* numerous. *Follicles* many. — Name said to be derived from "*trol* or *trolen*" a *ball* or *globe* in old German, and bearing the same meaning as our English word *Globe-flower*.

1. *T. Europæus* L. (*Mountain G.*); calyx of about 15 concave erect sepals, petals nearly as long as the stamens. *E. B. t.* 28.

Moist mountain-pastures in the north of England and Ireland, Wales and Scotland.  $\gamma$ . 6—8. — *Leaves* in 5 deep segments, which are again cut and serrated. *Flowers* large, handsome.

(*Eránthis hyemális* Salisb., the well-known *Winter-aconite* of our gardens and shrubberies, although naturalized in several places, has no claim to a place in the *British Flora*.)

9. *HELLÉBORUS* Linn. Hellebore.

*Cal.* of 5 persistent sepals. *Pet.* 8—10, small, tubular, and nectariferous. *Stamens* numerous. *Follicles* 3—10, sessile. — Name: *ἔλεω*, to injure, and *βόφα*, food, from its poisonous nature.

1. *H. viridis* L. (*green H.*); stem few-flowered leafy, leaves digitate, calyx spreading. *E. B.* t. 200.

Woods, thickets, and hedges; and about walls and old houses especially in a chalky soil: perhaps wild in Birkdale near Helmsley, Yorkshire, and in the south of England. *fl.* 3, 4. — About 1 ft. high. *Leaves* annual, large, on a broad stalk; upper ones sessile; segments linear-lanceolate, serrated at the extremity. *Cal.* large, greenish-yellow. This and the following have been often employed medicinally, instead of the true ancient or Greek *H.* (*H. officinalis* Sibth. and Smith).

2. *H. foetidus* L. (*stinking H.*); stem many-flowered leafy, leaves pedate, calyx converging. *E. B.* t. 613.

Pastures and thickets, especially in chalky counties, in England; wild in Hants; *Dr. Bromfield*. Blantyre, Barncluth and by the Doune (Ayr) on the west; and near Anstruther, on the east of Scotland: but certainly introduced. *fl.* 2—4. — A bushy plant, 2 feet high. *Leaves* evergreen, uppermost ones gradually becoming bracteas. *Flowers* globose; *calyx* often tipped with a purple tinge. Fetid and powerfully cathartic.

10. *AQUILÉGIA* Linn. Columbine.

*Cal.* of 5 sepals, deciduous, coloured. *Pet.* 5, regular, terminating below in a horn-shaped spur or nectary. *Stamens* numerous. *Follicles* 5. — Named from *Aquila*, an eagle, whose claws the nectaries resemble.

1. *A. vulgaris* L. (*common C.*); spur of the petals incurved, follicles hairy, stem leafy many-flowered, leaves nearly glabrous, styles as long as the stamens. *E. B.* t. 297.

Woods and coppices, in several places, perhaps wild in Hants. *fl.* 5—7. — Inner *stamens* frequently imperfect.

11. *DELPHINIUM* Linn. Larkspur.

*Cal.* coloured, deciduous, irregular, upper sepal produced at the base into a spur. *Pet.* 4.; 2 upper ones with appendages included within the spur. *Stamens* numerous. *Follicles* 1—5. — Named from *Delphinus*, or *δελφιν*, a dolphin; on account of the shape of the upper sepal.

1. *D. Consolida* L. (*Field L.*); stem erect branched, flowers in lax racemes, petals combined, inner spur of one piece, pedicels shorter than the bracteas, follicle one glabrous. *E. B.* t. 1839.

Sandy or chalky fields; Suffolk, Kent. "About Cambridge, at Quay, the hills are quite blue with it; it also occurs red, pink, and

white, and yet *Ray* does not mention it;” *Henslow*. Near St. Helier’s, Jersey: *Mr. Babington*. 4. 6, 7.

12. *ACONITUM* Linn. Wolf’s-Bane.

*Cal.* petaloid, irregular, upper sepal helmet-shaped; 2 upper petals or nectaries on long stalks, and concealed within the helmet-shaped leaflet. *Stamens* numerous. *Follicles* 3—5.—Name derived from *Acone* in Bithynia; or rather from *acon*, a dart, from its having been long ago used to poison such weapons with.

1. *A. \* Napellus* L. (common *W.*, or *Monk’s-hood*); upper sepal arched at the back, spur of the nectary nearly conical bent down, wings of the stamens cuspidate or none, lobes of the leaves cuneate pinnatifid. *E. B. S. t.* 2730.

Tem, Herefordshire. Denbighshire and Monmouthshire. Below Staverton Bridge, Devon. 4. 5—7.

13. *ACTÆA* Linn. Bane-berry.

*Cal.* of 4 sepals caducous. *Pet.* 4. *Stamens* numerous. *Ovary* 1. *Berry* 1-celled, indehiscent. *Seeds* numerous.—Named from *ακτῆ*, the *Elder*; the leaves somewhat resembling those of the *Elder*.

1. *A. spicata* L. (*B.*, or *Herb Christopher*<sup>\*</sup>); raceme simple elongated, petals as long as the stamens, pedicels of the fruit slender. *E. B. t.* 918.

Bushy places, especially in limestone tracts in Yorkshire; near Halifax: said to be found near Ambleside and Sandwick, Ulleswater, in Westmoreland. 4. 5.—*Stem* 1—2 ft. high. *Leaves* petiolate, 3-ternate; *leaflets* ovate, deeply cut and serrated.

14. *PÆONIA* Linn. *Pæony*.

*Cal.* of 5 sepals. *Pet.* 5—10, concave. *Stamens* numerous, arising from a thick disk. *Follicles* 2—5, with many seeds, and covered with the bi-lamellated stigmas.—Said to be named in honour of the physician *Pæon*, or *Παιων*; but this was one of the names of Apollo, and the title of all physicians.

1. *P.\* corallina* Retz (*entire-leaved P.*); herbaceous, follicles downy recurved, leaves biternate glabrous, their segments ovate entire. *E. B. t.* 1513.

On the island called Steep Holmes, in the Severn. Blaize Castle, near Bristol. *Mr. Hancock*. 4. 5, 6.

ORD. II. BERBERIDACEÆ Vent.

*Sepals* 3—6, often coloured, in a double row and bracteated. *Petals* of the same or double that number, glandular at the base.

*Stamens* opposite to the petals. *Anthers* 2-celled, opening by recurved valves. *Ovary* 1-celled. *Style* usually short. *Fruit* mostly a *Berry*. *Seeds* inserted at the base of or upon a lateral *placenta*. *Albumen* fleshy. — Shrubs often spiny, or herbs, of temperate climates. Leaves ciliated on the serratures.

1. *BERBERIS*. Stamens 6. Fruit a 2—3-seeded berry.
2. *EPIMEDIUM*. Stamens 4. Fruit a many-seeded pod.

### 1. *BÉRBERIS* Linn. Barberry.

*Cal.* of 6 concave, coloured, inferior, deciduous sepals. *Pct.* 6, each with two glands at the base. *Stamens* 6. *Stigma* peltate, nearly sessile. *Berry* 2—3-seeded. — Name: *Berbêrys* is the Arabic name of this fruit.

1. *B. vulgâris* L. (*common B.*); racemes pendulous, spines 3-forked, leaves obovate ciliato-serrate. *E. B.* t. 49.

Copses, woods, and hedges, in England and Scotland. Near Fermoy, Ireland. *h.* 5, 6. — Shrub with upright twiggy stems. Flowers yellow, smelling disagreeably. *Stamens* highly curious in their formation and in their elastic property when touched. *Berries* oblong, a little curved, red, tipped with the black *stigma*; they are acid and much used for preserves.

### 2. *EPIMEDIUM* Linn. Barrenwort.

*Cal.* of 4 sepals, caducous. *Pet.* inferior, with an inflated *nectary* on the upper side. *Stamens* 4. *Capsule* pod-shaped, 2-valved, inner valve bearing several seeds along its middle. — Name of doubtful origin.

1. *E. \* alpinum* L. (*alpine B.*); root-leaves none, stem-leaf twice ternate. *E. B.* t. 438.

Subalpine woods, but only where planted. Bingley woods, Yorkshire. On Carrock Fell and Skiddaw, Cumberland. Near Glasgow and Edinburgh. *4.* 5. — Stems several from the same root, erect, simple, bearing each a leaf; leaflets heart-shaped, extremely delicate, ciliated at the margin, hairy beneath, serrated; lateral ones inequilateral. *Panicle* shorter than the leaf, springing from the swollen base of the petiole. *Flowers* reddish; *nectary* yellowish, resembling an inflated membrane. *Anthers* very curious, of 2 cells, opening by two valves which spring back upwards, and suffer the pollen to escape.

## ORD. III. NYMPHÆACEÆ De Cand.

*Sepals* about 5, often gradually passing into the numerous petals, and these again into *stamens*, which arise from a fleshy disk surrounding more or less entirely the many-celled and many-seeded *ovary*. *Stigma* peltate, rayed. *Seeds* in a gelatinous

aril. *Albumen* farinaceous. *Embryo* enclosed in a membranous bag. *Cotyledons* foliaceous.—*Aquatic* herbs, with *peltate* or *cordate* leaves and *magnificent* flowers.—The roots of *Nymphæa Lotus* are used as food. One plant of this family, found by Sir R. Schomburgk in the Berbice (*Victoria regia*), has the blossoms 15 inches and the leaves 6 feet in diameter!

1. NYMPHÆA. Petals and stamens inserted upon the base of the ovary.
2. NUPHAR. Petals and stamens inserted upon the receptacle.

### 1. NYMPHÆA Linn. White Water-Lily.

*Cal.* of 4—5 sepals. *Pet.* inserted, as well as the *stamens*, upon a fleshy disk or covering to the ovary (so as apparently to arise from it). *Berry* many-celled, many-seeded.—Name, the *Nυμφαία* of the Greeks, so called from its inhabiting the waters, as the *Nymphs* or *Naiads* were wont to do.

1. *N. álba* L. (*great W.*); leaves cordate entire, stigma of 16 ascending rays. *E. B. t.* 160.

Lakes and still waters, frequent.  $\gamma$ . 7.—Of this there is occasionally a variety with small flowers.

### 2. NÚPHAR Sm. Yellow Water-Lily.

*Cal.* of 5—6 sepals. *Pet.* inserted, as well as the *stamens*, upon the *receptacle*. *Berry* superior, many-celled, many-seeded.—Name, the *Νουφάρ* of Dioscorides, applied to this plant. The *Arabic* name is *Naúfar*, according to Forskal.

1. *N. lútea* Sm. (*common Y.*); leaves cordate their lobes approximate, *cal.* of 5 sepals, stigma expanded entire with from 10—20 rays. *Nymphæa L.*: *E. B. t.* 159.

Lakes and ditches, frequent.  $\gamma$ . 7.—*Flowers* large, smelling somewhat like brandy; which circumstance, in conjunction with its flagon-shaped seed-vessels, has led to the name Brandy-bottle.

2. *N. púmila* De C. (*least Y.*); leaves cordate the lobes approximate, stigma (green) with 8 or 10 teeth and as many (yellow) rays, fruit furrowed upwards. *N. minima. E. B. t.* 2292.

In several of the small Highlands lakes. Mugdock, near Glasgow. Chartners Lough, Northumberland.  $\gamma$ . 7, 8.—From the observations made by Dr. Torrey and Gray, it would seem doubtful if this were essentially distinct, not merely from *N. Kalmiana*, but even from *N. lutea*, and some others.

## ORD. IV. PAPAVERACEÆ Juss.

*Calyx* of 2 rarely 3 deciduous sepals. *Corolla* of 4 rarely 5 or 6 petals. *Stamens* indefinite. *Ovary* 1-celled. *Stigma* lobed

or rayed. *Fruit* dry, with 2 or more parietal usually projecting placentas, forming complete or incomplete dissepiments, hence 1- or several-celled, many-seeded. *Embryo* in the base of a fleshy *albumen*.—*Herbaceous* plants. Leaves *alternate*.—*Opium* is the product of this tribe, which largely afford a milky, acrid, and narcotic juice; while the seeds of all, except *Argemone Mexicana*, are mild and oleaginous. In all the species the *petals* are crumpled in aestivation except in *Sanguinaria*, where they are 8—10 in number.

\* *Fruit globose, oblong, or clavate. Stigma rayed.*

1. PAPAVER. Placentas lamelliform, projecting to near the axis. Stigma

2. MECONOPSIS. Placentas filiform. Style short but evident.

\*\* *Fruit linear, elongated. Stigma 2—4-lobed.*

3. GLAUCIUM. Placentas 2, spongy, meeting in the axis. Pod 2-valved, opening from the apex. Seeds not crested.

4. RÖEMERIA. Placentas 3—4 (in *Brit. sp.*), scarcely projecting. Pod 3—4-valved, opening from the apex. Seeds not crested.

5. CHELIDONIUM. Placentas 2, filiform. Pod 2-valved, opening from the base. Seeds crested.

\* *Fruit globose, oblong, or clavate. Stigma rayed.*

1. PAPÁVER Linn. Poppy.

*Sepals* 2 rarely 3. *Pet.* 4 rarely 6. *Stigma* sessile, radiated. *Caps.* with the seeds on parietal *placentas* projecting towards the centre of the single cell, and escaping by pores beneath the permanent rayed sessile *stigma*.—Named because it is administered with *pap* (*papa*, in Celtic) to induce sleep.

1. *P. Argemone* L. (*long-prickly-headed P.*); capsule clavate hispid with erect bristles, filaments dilated upwards, stem leafy, leaves bipinnatifid. *E. B.* t. 643.

Corn-fields, not unfrequent. ☉. 5—7. — *Flowers* small. *Petals* narrow, scarlet.

2. *P. hybridum* L. (*round-rough-headed P.*); capsule subglobose hispid with spreading bristles, filaments dilated upwards, stem leafy, leaves bipinnatifid. *E. B.* t. 43.

Sandy and chalky fields in England, rather rare. Norfolk, Durham, Cornwall, Kent, Essex. Ormeshead. Ireland. ☉. 5—7.

3. *P. dubium* L. (*long-smooth-headed P.*); capsule glabrous oblong, crenatures of stigma distinct, filaments subulate, stem airy, bristles of the flower-stalks appressed, leaves once or twice pinnatifid, sessile. *E. B.* t. 644.

Corn-fields, not unfrequent. ☉, 5—7. — *Stems* 1—2 ft. high. *Flowers* large. *Petals* broad, palish scarlet.

4. *P. Rhæas* L. (*common red P.*); capsule glabrous nearly obose, crenatures of the stigmas overlapping each other at the

margin, filaments subulate, stem bristly, leaves once or twice pinnatifid sessile. —  $\alpha$ . bristles of the peduncles spreading. *E. B.* t. 645. —  $\beta$ . bristles of the peduncles appressed.

Corn-fields: rare in the west of Scotland.  $\beta$ . Channel Islands and Isle of Wight. ☉. *Fl.* all summer. — The common form is readily distinguished from *P. dubium* by its short capsule and the spreading hairs of the peduncles: var.  $\beta$ . is conjectured by Dr. Bromfield to be a hybrid.

5. *P. \* somniferum* L. (*white P.*); glaucous, capsule globose glabrous, filaments dilated upwards, stem and amplexicaul leaves usually glabrous. *E. B.* t. 2145.

In Norfolk, Cambridgeshire, Isle of Wight, and other places where the plant has been cultivated. ☉. 7. — *Flowers* generally white, with a purple eye, but varying much as to colour. From the unripe capsules *opium* is prepared.

## 2. MECONÓRSIS *Viguer*. Welsh-Poppy.

*Sep.* 2. *Pet.* 4. *Style* evident. *Stigma* of few rays. *Capsule* opening below the style by 4—6 valves. *Placentas* filiform. — Named from *μηκων*, a poppy, and *οψις*, resemblance.

1. *M. Cámbrica* Vig. (*common W.*); capsule glabrous, leaves mostly petiolate. *D C.* *Papaver L.*: *E. B.* t. 66.

Rare: rocky and shady places. Foot of Lidford cascade, Devon. Cheddar rocks, Somerset. N. Wales and Westmoreland. Rosstrevor hill, Ireland. Scotland, but naturalized. 4. 6. — *Leaves* on long stalks, pinnate, the pinnæ pinnatifid. *Flowers* large, yellow.

\*\* *Fruit* linear, elongated. *Stigma* 2—4-lobed,

## 3. GLAÚCIUM *Tourn*. Horned-Poppy.

*Sep.* 2. *Pet.* 4. *Stigma* 2-lobed, sessile. *Pod.* linear, the two *placentas* at length connected by a spongy dissepiment, hence 2-celled, 2-valved. *Seeds* dotted without a crest. — Named from the glaucous or sea-green hue of the stems and leaves.

1. *G. líteum* Scop. (*yellow H.*); pod minutely tuberculated, cauline leaves amplexicaul sinuate, stem glabrous. *E. B.* t. 8. *Chelidonium Glaucium L.*

Sandy sea-shores, frequent. ☉. 6—10. — *Stem* 1—2 ft. high, very glaucous, much branched. *Leaves* scabrous. *Flowers* very large, handsome, succeeded by pods 6—10 inches long.

2. *G. \* phæniceum* Gært. (*scarlet H.*); pod hispid, cauline leaves deeply pinnatifid and cut, stem hairy. *E. B.* t. 1433. *Chelidonium corniculatum L.*

Said to have been found on Portland Island, and in Norfolk. ☉. 6, 7. — *Petals* scarlet, with a black spot at their base.



4. *RŒMÉRIA* De Cand. *Rœmeria*.

*Sep.* 2. *Pet.* 4. *Stigma* 2—4-lobed, sessile. *Pod* linear with 2—4 *placentas* not connected by a perfect dissepiment, 1-celled, 2—4-valved, *valves* separating from the apex downwards. *Seeds* dotted, without a crest. — Named after J. J. Rœmer, Professor of Botany at Landshut.

1. *R.\*hýbrida* De C. (*erect-podded R.*); pod 3-valved erect hispid near the summit, leaves tripinnatifid the segments linear scabrous. *Chelidonium* L.: *E. B.* t. 201. *Glaucium violaceum* Juss.

Corn-fields, rare. Norfolk and Cambridgeshire. ☉. 5, 6. — *Sepals* hairy. *Petals* violet-blue.

5. *CHELIDÓNIUM* Linn. *Celandine*.

*Sep.* 2. *Pet.* 4. *Stigma* 2-lobed. *Pod* superior, linear, 1-celled, 2-valved, *valves* separating from the base upwards. *Seeds* crested. — Named from *χελιδων*, a swallow; probably from the plant flowering about the time of the arrival of those birds.

1. *C. május* L. (*common C.*); *E. B.* t. 1581.

Waste places, especially near towns and villages. 2. 5—8. — About 2 ft. high, slightly hairy, brittle, full of a yellow fetid juice. *Leaves* pinnate, with about 5 decurrent *leaflets*, which are broadly ovate, lobed, and crenated, sometimes jagged. *Flowers* in long-stalked umbels, yellow, rather small. *Sepals* glabrous. *Pod* long, somewhat turgid.

## ORD. V. FUMARIACEÆ De Cand.

*Sepals* 2, deciduous. *Petals* 4, more or less united, one or two of them gibbous or spurred at the base. *Stamens* 6, in two bundles. *Ovary* 1, with two opposite parietal *placentas*. *Style* filiform. *Stigma* lobed. *Fruit* dry, indehiscent, with one or two seeds; or a *pod* with two valves and many seeds. *Seeds* glossy, with a fleshy *albumen* and *embryo* at the base. — Herbs of temperate climates, with brittle stems and watery juice, slightly bitter and diaphoretic. — *Hypecœum* has four distinct *stamens*, and a different kind of *corolla*, but is now usually referred here.

1. *FUMARIA*. Fruit roundish, 1-seeded. Seeds not crested.

2. *CORYDALIS*. Fruit elongated, many-seeded. Seeds with a crest.

1. *FUMÁRIA* Linn. *Fumitory*.

*Pet.* 4, one of them gibbous or spurred at the base. *Ovary* 4-ovuled. *Fruit* indehiscent, 1-seeded, the *style* deciduous. *Seeds* without a crest. — Named from *fumus*, smoke, on account, it is said, of the smell.

1. *F. capreolata* L. (*rampant F.*); sepals broadly oval scarcely acute toothed at the base entire above as broad as the tube of the corolla and often half its length, fruit globose obtuse, leaflets flat. *E. B.* t. 943.

Corn-fields, gardens, hedges, and road-sides, frequent. ☉. 5—9. —*A* very variable plant, best distinguished by its large *petals* and *calycine leaves*. Stems generally climbing, sometimes only diffuse. Leaves bipinnate; leaflets usually very broad, rarely cuneate oblong, but never linear or grooved. In the south of Europe the fructiferous *pedicels* are usually remarkably recurved, in Germany and the south of England they are only arched backwards, and in Wales and Scotland often straight and patent. The fruit is often in some soils more or less tuberculated, but usually quite even. Lower *petal* linear or gradually dilated from the middle to the point, not merely dilated near the point as in the next species. Specimens from Tintagel in Cornwall, and Tenby in Wales, have been supposed by Mr. W. Mitten in the *Lond. J. Bot.* vii. p. 556, and Mr. Babington in the *Bot. Gazette*, i. p. 61, to be *F. agraria*. We have seen the former: it may be the plant of Koch, but not of Parlatore (which has the sepals oblong acuminate, and narrower than the corolla), nor perhaps of Lagasca: we can in no respect distinguish it from *F. capreolata*; perhaps even Parlatore's may be a variety.

2. *F. officinalis* L. (*common F.*); sepals ovato-lanceolate acute sharply toothed, fruit globose very abrupt or obcordate. —*a.* erect, very glaucous, leaflets narrow usually grooved. *F. officinalis*, *E. B.* t. 589. —*β.* diffuse or climbing, green, leaflets flat broad.

*a.* In dry fields and road-sides, common. —*β.* also frequent in highly cultivated fields and gardens. ☉. *Fl.* through the summer.

3. *F. parviflora* Lam. (*least-flowered F.*); sepals very minute, fruit globose slightly pointed or blunt, leaflets linear channelled. —*a.* flowers rose-coloured, leaves of a lively or yellowish green. *E. B.* t. 590. *F. Vaillantii* Bab. in *E. B. S.* t. 2877. —*β.* flowers white tipped with dark purple, leaves glaucous. *F. parvif. DC.*

*a.* Fields; rare. Woldham, near Rochester, and near Epsom. In newly turned-up ground for building, at Hill-side, north of the Calton Hill, Edinburgh. —*β.* Brookham, Surrey. Mr. Waddel's grounds at Hermitage, near Leith. ☉. 6—9. — The more common of these two *vars.* is that with white fls. The purple or rose-coloured *var.* comes very near the true *F. Vaillantii*, which has the leaflets broader and flat, and the fruit more obtuse, but may be a mere variety.

4. *F. micrantha* Lag. (*small-flowered F.*); sepals peltate orbicular somewhat cordate at the base, inciso-dentate at the margin concave at the back, about twice shorter than the corolla and one and a half or twice broader, fruit globose subapiculate, segments of the leaves narrow linear grooved. *Hook. Ic. Pl.* t. 363. *E. B. S.* t. 2876.

About Edinb., and in several other localities in the east of Scotland; Dover and Guildford in England. ☉. 6—9.

## 2. CORÝDALIS *De Cand.* *Corydalis*.

*Pet.* 4, one of them gibbous or spurred at the base. *Ovary* many-ovuled. *Pod.* 2-valved, compressed, many-seeded. Seeds with a crest. — Named from *κορυδαλις*, the Greek name for the *Fumitory*, with which the present genus was, till lately, united.

1. *C.\* sólida* Hook. (*solid-rooted C.*); stem simple erect with a scale beneath the lower leaf, leaves 3—4 biternate their leaflets cuneate or oblong and as well as the bractæas cut, root tuberous solid, style persistent. *E. B.* t. 1471.

Groves and thickets: at Kendal (an old garden). Wickham, Hampshire (perhaps wild); and near Birmingham. *fl.* 4, 5. — *Flowers* large, purplish; *leaves* glaucous; *seeds* with a crest, in germination showing only one ovate *cotyledon*.

2. *C.\* lútea* Lindl. (*yellow C.*); stem angular erect, leaves bipinnate, leaflets broadly cuneate cut or trifid, bractæas minute, style deciduous, pods nearly cylindrical shorter than the pedicels, root fibrous. *Fumaria*: *E. B.* t. 588.

On old walls in many places, but only where it had escaped from cultivation. *fl.* 5—8. — *Flowers* yellow; *seeds* with a concave crest, in germination with two lanceolate *cotyledons*.

3. *C. claviculáta* DC. (*white climbing C.*); stem much branched climbing, leaves pinnate, pinnæ stalked ternate or pedate, leaflets elliptical entire, petioles ending in tendrils, pedicels very short scarcely so long as the minute bractæas, root fibrous, style persistent. *Fumaria L.*: *E. B.* t. 103.

Bushy and shady places, in gravelly or stony soil. In Scotland, most abundant on walls and roofs of houses, especially in the Highlands. *fl.* 6, 7. — *Stems* long, very slender. Whole plant extremely delicate. *Flowers* small, pale yellow almost white; *seeds* with a concave crest, in germination with two oblong lanceolate *cotyledons*.

## . ORD. VI. CRUCIFERÆ *Juss.*

*Calyx* of 4 sepals. *Petals* 4. *Stamens* usually 6 and tetradynamous; 2 solitary, alternate with the petals; 4 opposite to them in 2 pairs: rarely only 4 and equal. *Ovary* and *Style* 1; *hypogynous glands* at the base of the solitary stamens. *Pericarp* usually a *pouch* or *pod*, 2-rarely 1-celled, 2-valved the valves opposite the shorter stamens; sometimes valveless. *Seeds* on marginal placentas (between the longer stamens) without *albumen*. *Radicle* curved. *Cotyledons* plane, parallel to the dissepiment and with their edges applied to the radicle (*accumbent*

o=)<sup>1</sup>; or plane, with their back turned to the radicle (*incumbent* o||); or folded and embracing the radicle (*conduplicate* o>>) — *Herbs. Leaves* alternate. *Flowers* generally in corymbs which at length become racemes. — A most important *Natural Order*, many of the plants which it contains being cultivated as esculents; the *Cabbage*, *Turnep*, *Mustard*, and *Cresses* of various kinds, *Horse-radish*, &c. They contain an essential oil which renders them stimulating, while their seeds yield a fine and mild oleaginous fluid, as *Mustard*, and they are antiscorbutic. The mustard-seed is used for emapisms. Most kinds contain sulphur and nitrogen, and give out in decaying a smell resembling that of animal matter.

I. SILICULOSÆ. Fruit short, scarcely more than a half longer than broad.

A. *Fruit without valves; or 1-celled, 1-seeded.*

17. CAKILE. Fruit of 2 joints placed end to end, upper angular deciduous 1-seeded, lower sometimes sterile. Cot. o=.
32. CRAMBE. Fruit of 2 joints placed end to end, upper globose deciduous 1-seeded, lower stalk-like. Cot. o>>.
26. SENEHIERA. Fruit with 2 cells placed side by side, each 1-seeded. Cot. o||.
27. ISATIS. Fruit 1-celled, 1-seeded, with keeled valves. Cot. o||.

B. *Pouch with a dissepiment and 2 valves.*

\* *Style flat, winged. Dissepiment of pouch oval.*

31. VELLA. Style twice as long as the turgid pouch. Cot. o>>.

\*\* *Style nearly terete.*

† *Pouch laterally compressed; dissepiment narrow, oblong, or linear: valves keeled or winged.*

23. CAPSELLA. Pouch obcordato-cuneate; valves keeled wingless; cells many-seeded. Cot. o||.
13. THLASPI. Pouch emarginate; valves winged; cells 2—8-seeded. Filaments simple. Cot. o=.
14. HUTCHINSIA. Pouch entire; cells 2-seeded. Filaments simple. Cot. o=.
15. TEESDALIA. Pouch emarginate; cells 2-seeded, Filaments with a scale. Cot. o=.
16. IBERIS. Cells of pouch 1-seeded. Petals unequal. Cot. o=.
25. LEPIDIUM. Cells of pouch 1-seeded. Petals equal. Cot. o||, or sometimes o=.

†† *Pouch dorsally compressed or globose; dissepiment oval, in the broadest diameter.*

10. COCHLEARIA. Pouch turgid; valves 1-nerved. Style permanent. Seeds many in each cell. Cot. o=, Petals white.

<sup>1</sup> The radicle points to or is next the placenta, and, unless accidentally twisted, must be parallel to the dissepiment. When therefore the cotyledons are flat, with their edges turned to the placenta, they are *truly accumbent*, although *apparently incumbent*. But when they are linear or the seed is nearly terete, their position and that of the seed itself may be altered by a twist of the seed-stalk, in which case it is preferable to be guided solely by the apparent relative position of the radicle and cotyledons in the detached seed.

9. ARMORACIA. Pouch turgid; valves nerveless. Style permanent. Seeds many in each cell. Cot. o=. Petals white or yellow.
24. SUBULARIA. Pouch turgid. Style deciduous. Seeds many in each cell. Cot. o||. Petals white.
12. DRABA. Pouch compressed or valves slightly convex. Seeds many in each cell. Cot. o=.
22. CAMELINA. Pouch inflated; valves 1-nerved. Style permanent. Seeds many in each cell. Cot. o||. Petals yellow.
11. KONIGA. Pouch compressed; cells 1-ovuled, 1-seeded. Filaments simple. Hypogynous glands 8. Cot. o=. Petals white.
- 11<sup>a</sup>. ALYSSUM. Pouch compressed; cells 2-ovuled, usually 2-seeded; valves convex in the middle, flat at the edges. Seeds not margined. Filaments (the two shorter ones or all) with a tooth, rarely simple. Hypogynous glands (or subulate processes, when all the filaments are simple), 4. Petals emarginate (yellow). Cot. o=.
- 11<sup>b</sup>. BERTERIA. Pouch compressed; cells about 6-seeded. Two shorter filaments with a tooth. Hypogynous glands 4. Petals (white) tripartite. Col. o=.

II. SILIQUOSÆ. Fruit usually much longer than broad, rarely only twice as long.

C. Pods 2-valved, with a dissepiment.

\* Style sometimes very short, sometimes elongated, but not forming a stout conical beak. Cot. o= or o||.

† Calyx equal at the base, or very slightly gibbous.

6. DENTARIA. Pods flat, linear; valves nerveless, usually separating elastically. Style filiform. Seed-stalks broad. Cot. o=.
7. CARDAMINE. Pods flat, linear; valves nerveless, usually separating elastically. Style short or none. Seed-stalks slender. Cot. o=.
5. ARABIS. Pods compressed, long, linear; valves 1-nerved, or with several longitudinal coarse veins. Seeds in one row. Cot. o=.
4. TURRITIS. Pods compressed, long, linear; valves 1-nerved. Seeds in two rows. Cot. o=.
12. DRABA. Pods compressed, oblong; valves 1-nerved. Seeds in 2 rows. Cot. o=.
8. BARBAREA. Pods linear, 4-angled; valves 1-nerved. Seeds in a single row. Cot. o=.
8. NASTURTIUM. Pods oblong or linear, terete; valves very convex, reticulately veined, nerveless. Seeds irregularly in 2 rows. Cot. o=.
19. SISYMBRIUM. Pods linear, terete, or slightly angled; valves 8- (or rarely 1-) nerved. Seeds not striated; stalks slender, Calyx slightly spreading. Cot. o||.
20. ALLIARIA. Pods long, linear, terete; valves slightly 8-nerved. Seeds striated; stalks broad. Cot. o||.
21. ERYSIMUM. Pods linear, 4-angled; valves 1-nerved. Seed-stalks slender. Calyx erect. Cot. o||.

†† Calyx conspicuously bisaccate at the base. Valves of pod nerved.

21. ERYSIMUM. Stigma nearly simple. Pod 4-angled. Cot. o||.
2. CHEIRANTHUS. Stigma on a style, lobes patent (or capitate). Cot. o=.
1. MATTHIOLA. Stigma sessile, lobes connivent, either thickened or horned at the back. Cot. o=.

18. HESPERIS. Stigma nearly sessile; lobes elliptical, obtuse, connivent. Cot. o||.
- 18\*. MALCOLMIA. Stigma conical acute. Pod cylindrical. Cot. o||.
- \*\* *Style forming a stout conical, often seed-bearing beak.* Cot. o>>.
28. BRASSICA. Calyx erect. Pod terete or angled. Seeds in a single row, globose.
29. SINAPIS. Calyx spreading. Pod terete or angled. Seeds in a single row.
30. DIPLOTAXIS. Calyx spreading. Pod compressed. Seeds in two rows.

D. Fruit without valves or a dissepiment.

33. RAPHANUS. Fruit divided transversely into several 1-seeded joints. Calyx erect. Cot. o>>.

SUB-ORD. I. PLEURORHIZÆ. *Cotyledons accumbent.* (o=)

Tribe I. ARABIDÆÆ. *Pod elongated; valves flat, concave, or slightly keeled: dissepiment narrow, in the broadest diameter.*<sup>1</sup> Cot. o=(Gen. 1—8.)

I. MATTHÍOLA Br. Stock.

*Pod* (rounded or compressed) crowned with the connivent 2-lobed *stigma*, the lobes either thickened at the back<sup>2</sup> or with a horn at the base. *Cal.* erect, 2 opposite sepals saccate at the base. Longer *filaments* dilated.—Named in honour of an Italian physician, *P. A. Matthiolum*.

1. *M. incána* Br. (*hoary shrubby S.*); stem shubby upright branched, leaves lanceolate entire hoary, pods cylindrical without glands. *Cheiranthus L.*; *E. B. t.* 1935.

Cliffs to the eastward of Hastings; but not wild. Ventnor, Isle of Wight. *h.* 4—6. — The origin of the Stock Gilly-flower of our gardens, where it is generally treated as an annual or biennial.

2. *M. sinuáta* Br. (*great sea-S.*); stem herbaceous spreading, leaves downy lower ones sinuated, pods compressed muricated. *Cheiranthus L.*; *E. B. t.* 462.

Sandy shores of Wales, Cornwall, Jersey, and Guernsey. *♂.* 5—8. — *Flowers* purple, large, fragrant at night. Our two British species have no point or horn at the base of the stigma.

2. CHEIRÁNTHUS Linn. Wall-flower.

*Pod* compressed or 2-edged. *Cal.* erect, 2 opposite sepals saccate at the base. *Stigma* placed on a *style*, 2-lobed, the lobes

<sup>1</sup> Some species of *Draba* almost agree with this character.

<sup>2</sup> It often happens, when this is the case, that the radicle is slightly twisted so as to be applied to the back of the cotyledons; but, as they are parallel to the dissepiment, they are really accumbent.

patent or capitate. *Hypogynous glands* none between the longer stamens. — Named perhaps from the Arabic *Kheyry*, not however originally applied to this genus; or rather from *χειρ*, the *hand*, and *αῖθος*, a *flower*, because from its fragrance one delights to carry it in the hand.

1. *C. Chetvi* L. (*common W.*); leaves lanceolate acute entire with bipartite appressed hairs, pods linear, lobes of the stigma patent, stem shrubby at the base. *C. fruticosus* L.: *E. B.* t. 1934.

Old walls. *h.* 5, 6. — A *variety*, with larger, more highly coloured and more flaccid *petals*, is commonly cultivated in gardens.

### 3. *BARBAREA* Br. Winter-cress.

*Pod* 4-angled and somewhat 2-edged; *valves* with a middle nerve. *Seeds* in a single row. *Calyx* erect, equal at the base. *Glands* between the shorter filaments and the germen, and a subulate one between each pair of the longer ones. — Name: this plant was formerly dedicated to *St. Barbara*.

1. *B. vulgaris* Br. (*bitter W., yellow Rocket*); lower leaves lyrate the superior ones obovate toothed or pinnatifid at the base, pods linear bluntly 4-angled acuminate much thicker than the pedicel. — *α.* uppermost side lobes of the radical leaves as long as the transverse diameter of the terminal roundish or somewhat cordate terminal lobe. *Erysimum Barbarea* L.: *E. B.* t. 443. — *β.* side lobes of the radical leaves all small and much shorter than the transverse diameter of the oblong-ovate or cordate terminal lobe. *B. stricta* Andr.

Pastures and hedges, frequent. *h.* 5—8. — Stem 1—2 feet high, stout, furrowed, branched, glabrous. *Petals* yellow, usually the length of the calyx, or in what is called *B. arcuata*, twice as long. *Style* conspicuous.

2. *B.\* præcox* Br. (*early W.*); lower leaves lyrate or pinnate, upper ones pinnatifid, segments linear oblong entire, pods linear compressed obtuse scarcely thicker than the pedicel. *Erysimum E. B.* t. 1129.

Waste places in Devonshire and elsewhere. *h.* 4—10. — About 1—2 feet high; more slender than the last in every part; *flowers* smaller; *Pods* longer. *Style* very short.

### 4. *TURRITIS* Linn. Tower-Mustard.

*Pod* elongated, compressed, 2-edged; *valves* nerved or keeled. *Seeds* in a double row. *Calyx* nearly equal at the base. — Named from from *turris*, a *tower*; the leaves becoming gradually smaller upwards, so that the plant assumes a pyramidal form.

1. *T. glabra* L. (*long-podded T.*); radical leaves toothed hairy, cauline ones amplexicaul entire glabrous. *E. B. t.* 777.

Banks and road-sides in many parts of England, but not general; apparently most frequent in Norfolk and Suffolk. Bowling Bay, Paitick, and Redgorton (Perthshire), in Scotland. ☉. 5—7. — *Stem* 1—2½ feet high. *Leaves* oblong-lanceolate, glaucous, *radical* ones toothed or sinuate at the base, *cauline* ones sagittate. *Flowers* yellowish-white. *Pods* long, erect. In this genus there are no glands between the larger stamens.

### 5. *ARABIS* Linn. Rock-cress.

*Pod* linear, compressed, crowned with the nearly sessile stigma; *valves* nerved or coarsely veiny. *Seeds* in one row. *Calyx* erect.—Name from *arabís*, applied by Dioscorides to *Lepidium Draba*.

1. *A. stricta* Huds. (*Bristol R.*); leaves toothed obtuse hispid, radical ones sinuate toothed, cauline leaves sessile, stems hairy at the base, petals cuneate-linear erect, pods erect, their valves 1-nerved. *E. B. t.* 614.

Rare; St. Vincent's rocks, near Bristol, among limestone. ♀. —5.—Habit of *Sisymbrium Thalianum*, but perennial; *root-leaves* longly ciliated, with frequently forked or trifid setæ, and rather than hairy; *flowers* twice the size; *stem-leaves* few, small.

*petraea* DC. (*alpine R.*); radical leaves lyrato-pinnatifid cauline ones nearly undivided, petals obovate clawed spreading twice as long as the pedicels, their 1-nerved. *A. hispida* L. *Cardamine hastulata*. *E. B.*

Alpine rocks in North Wales. Frequent on the high mountains of the west and north of Scotland, particularly the Cairngorm range. Hebrides, especially Skye. ♀. 6—8. — *Plant* 3—6 inches high, slender, glabrous or hairy. *Flowers* with a purple tinge.

3. *A. ciliata* Br. (*fringed R.*); leaves somewhat toothed oval labrous ciliated, radical ones nearly sessile obtuse, those of the simple stem semi-amplexicaul or rounded at the base, pods early erect, their valves 1-nerved. *Turritis alpina* L.: *E. B.* 1746.

By the sea-side at Rinvile, Cunnamara, Ireland. ♂. 7, 8. — *Stem*. 4—6 inches high. *Root-leaves* several, oval, or obovate-oblong, obtuse; *cauline* ones small.

4. *A. hirsuta* Br. (*hairy R.*); leaves all hispid dentate, cauline ones semi-amplexicaul, pods erect-straight, their valves 1-nerved. *Turritis* L.: *E. B. t.* 587.

Walls, rocks, and banks: frequent in many parts of England and Scotland. ♂. 6—8. — One foot or more high, erect, stiff. *Stem*



rough with spreading hairs, bearing many leaves. *Petals* small, white, erect.

5. *A. Turríta* L. (*Tower Wall-cress*); leaves amplexicaul, pods recurved flat and linear with the margins thickened and valves coarsely veined longitudinally not nerved, bractæas foliaceous. *E. B.* t. 178.

Walls of Trinity and St. John's Colleges, Cambridge; and Magdalen College, Oxford. ♂. 5.

#### 6. *DENTÁRIA* Linn. Coral-root.

*Pod* narrow-lanceolate, tapering; the *valves* flat, generally separating elastically, nerveless. *Seed-stalks* broad. — Name: *dens*, a tooth, from the tooth-like scales of the root.

1. *D. bulbifera* L. (*bulbiferous C.*); stem quite simple, lower leaves pinnated, upper ones simple with axillary bulbs. *E. B.* t. 309.

Woods and shady places, rare. Sussex; Middlesex. Near Dupplin and banks of the Esk, but scarcely wild. *℥.* 4, 5. — *Root* creeping, bearing thick fleshy scales or tooth-like processes. *Stem* 1—1½ foot high. *Leaflets* lanceolate as are the upper leaves, serrated, somewhat fleshy; *leaves* often having a small bulb in their axils. *Flowers* rather large, purple.

#### 7. *CARDAMÍNE* Linn. Bitter-cress.

*Pod* linear, the *valves* flat, generally separating elastically, nerveless. *Seed-stalks* slender. — Name: *καρδία*, the heart, and *δαμαω*, to fortify; from its supposed strengthening qualities.

1. *C. amára* L. (*large-flowered B.*); leaves pinnated, radical leaflets roundish, cauline ones dentato-angled, style oblique, stigma rather acute, stem rooting at the base, petals obovate. *E. B.* t. 1000.

Wet meadows, near rivulets; not unfrequent. *℥.* 4—6. — One foot high. Well distinguished from the following by the broad angulato-dentate *leaflets* of its upper *leaves*, and the large white flowers, which have purple *anthers*.

2. *C. praténsis* L. (*common B.*); leaves pinnate, radical leaflets roundish dentate, cauline ones lanceolate nearly entire, style straight, stigma capitate, petals obovate. *E. B.* t. 776.

Moist meadows, abundant. *℥.* 4—6. — *Stem* 1—2 feet high. *Flowers* large, blush-coloured, sometimes found double, when the leaflets occasionally produce new plants, on coming in contact with the ground, while still attached to the parent plant.

3. *C. impatiens* L. (*narrow-leaved B.*); leaves pinnate, leaflets lanceolate somewhat cut or entire, petioles of the stem-leaves

with fringed auricles at their base, petals linear or none. *E. B.* t. 80.

Moist rocks, rare; Derbyshire, Westmoreland, and Cumberland. By the Wye above Tintern. Godalming, Surrey. Near the falls of the Clyde and banks of the Doune, Scotland. ☉. 5—8. — *Stem* 1—1½ foot high. Well distinguished by the stipule-like auricles at the base of each petiole. *Flowers* minute, white.

4. *C. hirsuta* L. (*hairy B.*); leaves all pinnate without auricles, radical leaflets roundish angled or toothed petiolate, stem-leaflets narrower nearly sessile, petals oblong, stigma blunt, pods erect. — *α.* smaller, pedicels erect, stamens often 4, style very short. *E. B.* t. 492. — *β.* larger, pedicels patent, stamens usually 6, style as long as the breadth of the pod. *C. flexuosa* With. *C. sylvatica* Link.

Moist shady places, abundant. ☉. 3—8. — Varying much in size and luxuriance, according to soil and situation, from 4 inches to a foot or more in height. *Stamens* 6 in both varieties, or 4 in depauperated specimens.

(*C. bellidifolia* L., *E. B.* t. 2355, with simple entire leaves, is unknown, at least in the present day, as a native either of Scotland or Ireland.)

#### 8. NASTURTIIUM Br. Water-Cress. Yellow-Cress.

*Pod* nearly cylindrical (sometimes short); *valves* concave, neither nerved nor keeled. *Seeds* in a double row. *Calyx* patent. — Named from *Nasus tortus*, a convulsed nose, an effect supposed to be produced by the acrid and pungent quality of this plant.

1. *N. officinale* Br. (*common W.*); leaves pinnate, leaflets ovate subcordate sinuato-dentate, petals (white) twice as long as the calyx, pods linear. *Sisymbrium Nasturtium* L.: *E. B.* t. 855.

Brooks and rivulets, frequent. ♀. 5—10. — A well-known aquatic plant, and an excellent and wholesome salad. *Lower leaves* large, of 5—7 distant leaflets, the terminal one the largest and roundest; *cauline leaflets* subovate, sometimes oblong, all rather succulent, glabrous; more or less waved or toothed. *Pods* about an inch long, about as long as the pedicels, curved upwards. *Hypogynous glands* 4.

2. *N. sylvestre* Br. (*creeping Y.*); leaves pinnate, leaflets lanceolate cut, those of the uppermost leaves nearly entire, root creeping, petals yellow twice as long as the calyx, pods narrow oblong or linear. *Sisymbrium* L.: *E. B.* t. 2324.

Water-sides and waste places, but not common; very rare in Scotland. ♀. 6—8. — *Roots* much creeping. *Stem* 1 foot high, angular, branched. *Rhachis* often slender and zigzag. *Pedicels* patent; *Pods* also patent or curved a little upwards, varying from 3 to 9 lines long (*De C.*), usually about the length of the pedicels, but often longer, sometimes shorter. *Hypogynous glands* 6. *N. anceps*

of Bab. Man., and perhaps also of Reichenbach (Ic. Flor. Germ. n. 4364.), appears to be merely a form with shorter pods than usual; at least we have seen no British specimens so distinctly marked as to entitle them to rank even as a permanent variety: the true *N. anceps* DC. (figured in Flor. Dan. t. 984.) is *Armoracia amphibia*; the plant of some German writers is *N. sylvestre*, and of others *N. terrestre*, while that we have from Caucasus, and of some Russian botanists, is *N. Pyrenaicum* Br.<sup>1</sup>

3. *N. terrestre* Br. (*Marsh Y.*); leaves lyrato-pinnatifid unequally toothed, root simply fibrous, petals (yellow) not longer than the calyx, pods oblong turgid and the septum 2—4 times longer than broad. *N. palustre* DC. *Sisymbrium terrestre* E. & B. t. 1747.

Watery places. ☉. 6—10. — One foot high, branched. Pods about as long as the spreading pedicels, ascending. Distinguished chiefly from the last by its fibrous root, pinnatifid not pinnate leaves, minute petals, and more turgid pods.

Tribe II. ALYSSINÆ. Pouch with the dissepiment in the broadest diameter: valves flat or concave. Cot. 0=. (Gen. 9—12.)

#### 9. ARMORACIA Rupp. Horse-Radish. Water-Radish.

Pouch elliptical or globose, many-seeded: the valves turgid, not nerved. Filaments simple. Hypogynous glands 6. Seeds not margined. Calyx patent. — So named by the Romans from *Armorica*, or Britany, where it was supposed to grow abundantly.

1. *A. amphibia* Koch (*great W.*); leaves oblong pinnatifid or serrated, root fibrous, petals (yellow) twice as long as the calyx, pouch 2—3 times shorter than the pedicel, stigma capitate. *Nasturtium* Br. *Sisymbrium* L.: E. B. t. 1840.

Watery places; not uncommon in England. 2. 6—9. — Stems 2—3 feet high. If any leaves grow under water, they are deeply pinnatifid, otherwise only deeply serrated. Pedicels usually deflexed. Style as long as the oblong germen. *A. natans* (*Nasturtium* DC.) is closely allied; so also is *A. Americana* (*Nasturtium natans* Torr. and Gr.), but it has the white petals and peltate stigma of the next.

2. *A. rusticana* Baumg. (*common H.*); radical leaves oblong on long foot-stalks crenate, cauline ones elongato-lanceolate serrate or entire, root long cylindrical, petals (white) twice as long as the calyx, pouch 2—3 times shorter than the pedicel, stigma peltate. *Cochlearia Armoracia* L.: E. B. t. 2323.

Said to be wild in some parts of the north of England, and in Scotland, but too often the outcast of gardens. 2. 5. — Roots

<sup>1</sup> The fruit of this species is different from *Nasturtium*, being an ovate pouch, the valves with a central vein or slender nerve, sometimes only conspicuous at the base; so that it is difficult to point out how it differs from *Armoracia*, except perhaps by the seeds.

long, running deep into the ground, well known at our tables, and esteemed for their pungent flavour. *Leaves* much veined. *Fruit* seldom perfect.

#### 10. COCHLEÁRIA Linn. Scurvy-Grass.

*Pouch* oval or globose, many-seeded; the *valves* turgid, with a prominent nerve in the middle. *Filaments* simple. *Hypogynous glands* 4. *Seeds* not margined, tuberculate. *Calyx* patent. — Name: *cochlear*, a *spoon*, from the shape of the leaves. ●

1. *C. officinális* L. (*common S.*); pouch globose ovate or elliptical, radical leaves cordate at the base, usually reniform entire or sinuated, sometimes hastate. —  $\alpha$ . larger, cauline leaves nearly all sessile, usually oblong or oval sinuated. *E. B.* t. 551. —  $\beta$ . smaller, lower stem-leaves usually deltoid and stalked. *C. Groenlandica* L.: *E. B.* t. 2403. —  $\gamma$ . radical leaves sometimes and cauline ones nearly all hastate stalked. *C. Danica* L.: *E. B.* t. 696.

$\alpha$  and  $\gamma$  on the sea-coast, in a stony or muddy soil, frequent;  $\beta$  on the Highland mountains. ☉ or ♃. 5—8. — The common variety exhibits, on the shores of the Frith of Clyde, all the variations noticed in the shape of the pouch, which is, moreover, often as large and veiny as in the figure of *C. Anglica*, in *E. B.* t. 552. The true radical leaves of our *var. γ* are perhaps always reniform; but having decayed, or been broken off, the lower cauline ones are mistaken for them.

2. *C. Anglica* L. (*English S.*); pouch elliptical (large) veiny, radical leaves petiolate ovate or oblong entire mostly acute or tapering at the base sometimes subcordate, cauline leaves mostly sessile oblong sinuated or with a few coarse teeth. *E. B.* t. 552.

Margins of large rivers, at a distance from the open sea, perhaps not uncommon. Thames between London and Woolwich; Avon above Bristol; Mersey near Warrington. Cree near Newton Stewart, Scotland. ☉. 5—7. — *Pouch* generally larger than in the last, but certainly not more elliptical or veiny than what we refer to that species; *leaves* narrower and often more entire; *flowers* larger. The *radical leaves* are sometimes cordato-ovate, but usually oblong, never, so far as we have observed, broadly reniform or angled; but perhaps this and many other supposed species are only forms of the variable *C. officinális*.

#### 11. KÓNIGA Br. Koniga.

*Pouch* subovate; *valves* nearly plane; *cells* 1-ovuled and 1-seeded; seed-stalks with their base adnate to the dissepiment. *Calyx* patent. *Petals* entire (white). *Hypogynous glands* 8! *Filaments* simple. — Name: revived by Mr. Brown, from the

*König* of Adanson, and altered by him to *Königa* in order to commemorate the important services rendered to Botany by Mr. *König* of the British Museum.

1. *K. \* maritima* Br. (*Sea-side K.*, or *sweet-Alyssum*). *Alyssum* Willd.; *E. B.* t. 1729. *Clypeola* L.

Near the sea, but only where escaped or ejected from gardens. Budleigh Salterton, Devon; on the garden-wall at Newlyn, Mount's Bay, Cornwall; near Aberdeen. *Æ.* 8, 9. — *Stem* somewhat woody at the base. *Leaves* linear-lanceolate, hoary with bipartite appressed hairs. *Flowers* white and fragrant, honey-scented. The plant is much cultivated. — Mr. Brown admits another species with several alternate ovules in each cell; and some foreign authors have still more extended the genus. In several genera, as *Arabis*, the number of hypogynous glands varies from 4 to 8.

(*Alyssum calycinum* Willd. has been enumerated as a British species; but it is unquestionably a plant recently introduced, either with seed-corn or ballast, though now established in several parts of England and Scotland. It has simple filaments, and long subulate processes instead of hypogynous glands, by which, and its persistent calyx, it is known from the rest of the genus. *Berteroa incana* DC. said to have been found near Lewes and Weymouth, has also no claims to be considered indigenous.)

## 12. DRABA Linn. Whitlow-grass.

*Pouch* or *pod* entire, oval or oblong; *valves* plane or slightly convex, 1-nerved at the base, nerved or veiny upwards; *cells* many-seeded. *Seeds* not margined. *Filaments* simple. — Named from *δραβή*, *acrid*, as are the leaves of many of this tribe.

\* *Petals* deeply cloven, white. *Erophila* DC.

1. *D. verna* L. (*common W.*); *scapes* naked, *leaves* lanceolate somewhat toothed hairy. *E. B.* t. 586. *Erophila vulgaris* DC. — *β.* pouch swollen.

Frequent on walls, rocks, and dry banks. — *β.* abundant on shelving rocks on Ben Lawers, above the lake. ☉. 3—6. — The var. *β* is a very singular one, found by ourselves and others, for many years, in the above locality, and never seen to vary: the *pouch* is as much inflated as that of *Subularia*.

\*\* *Petals* slightly emarginate, yellow. *Style* elongated. *Aizöpsis* DC.

2. *D. aizöides* L. (*yellow alpine W.*); *scapes* leafless glabrous, *petals* twice the length of the calyx, *leaves* lanceolate rigid glossy keeled and ciliated. *E. B.* t. 1271.

Walls and rocks near Swansea, S. Wales. *Æ.* 3, 4. — Remarkable for its bright yellow flowers and glossy leaves margined with hairs. The cultivated plant of this name is a variety with the *stamens* constantly scarcely longer than the *calyx*, and is *D. brachystemon* DC. :

the Welsh plant has the stamens of the length of the petals, as in wild Continental specimens, and the pouch glabrous.

\*\*\* *Petals slightly emarginate or entire, white. Style very short.*

3. *D. rupēstris* Br. (*Rock W.*); scape leafless or with rarely one leaf, pouch or pod oblong-oval, leaves plane lanceolate hairy. *D. hirta* *E. B.* t. 1338 (not *Linn.*).

Mountain summits; rare. Ben Lawers, Cairngorm, and Ben Hope; Scotland. 4. 7. — The slender perennial root penetrates deep among mosses and the crevices of rocks, bearing above many short branches, each crowned with a tuft of lanceolate, soft, plane, entire, or rarely obscurely toothed, hairy leaves; their margins ciliated; the hairs mostly simple, sometimes branched, on the surface not unfrequently stellated. Scapes several from the same root, 1—1½ inch high, slender, simple, stellato-pubescent. Pedicels short, pubescent. Cal. mostly downy. Pouch oval-oblong, pubescent. In cultivation the leaves become more glabrous, the hairs on the margin longer and more rigid, and the scape 3—3½ inches high.

4. *D. incāna* L. (*twisted-podded W.*); cauline leaves several lanceolate toothed hoary with starry pubescence, pod oblong-lanceolate somewhat twisted. *E. B.* t. 388.

Mountain rocks, in much less elevated situations and far more frequent than the last; in Wales, the N. of England, and Scotland. 3. 6, 7. — Stem 4—6 inches to a foot or more high, sometimes throwing out lateral branches. Lower leaves frequently entire, upper ones deeply toothed, almost cut, acute. Pods erect, mostly glabrous.

5. *D. murālis* L. (*Speedwell-leaved W.*); stem branched, leaves ovate obtuse amplexicaul toothed, pouch patent glabrous. *E. B.* t. 912.

Limestone mountainous countries, on rocks and walls. Craven, Yorkshire; Warden hills, Bedfordshire; Emborough, Somersetshire. About Forfar, Edinb., and Chelsea, where it has escaped from gardens. Blarney Castle, Ireland. ☉. 4. 5. — Six inches to one foot high. Leaves scabrous. Pouch elliptical, shorter than the pedicel.

Tribe III. THLASPIDÆ. *Pouch compressed, with the dissepiment very narrow in the narrowest diameter, valves keeled or winged. Cot. 0=.* (Gen. 13—16.)

### 13. THLĀSPI *Linn.* Penny-cress.

*Pouch* laterally compressed, emarginate; *valves* winged at the back; *cells* 2—8-seeded.—Named from *πλαω*, to *flatten*; on account probably of its compressed *seed-vessels*.

1. *T. arvēse* L. (*Field P. or Mithridate Mustard*); pouch orbicular entirely surrounded with a broad longitudinal wing, wing with a marginal nerve, cells about 6-seeded, seeds concen-

trically striated, leaves arrow-shaped toothed glabrous. *E. B. t.* 1659.

Fields and by road-sides, in various places; but not common. ☉. 5—7. — One foot high, branched above. *Flowers* extremely small, white. *Pouch* very large, with unusually broad wings.

2. *T. perfoliatum* L. (*perfoliate* P.); pouch obcordate entirely surrounded with a wing, wing with a marginal nerve, cells 4—6-seeded, seeds smooth, style included within the notch, cauline leaves cordate somewhat toothed glabrous. *E. B. t.* 2394.

Limestone pastures; rare. Burford, Oxfordshire; Bourton, Upper Slaughter, and Naunton-Seven-Springs, near Stow-on-the-Wold, Gloucestershire. Stone walls about Kineton, Warwickshire. ☉. 4, 5.

3. *T. alpestre* L. (*alpine* P.); pouch obovate retuse entirely surrounded by a wing, nerve of the wing obsolete, cells 2—4-seeded, style exserted, stamens as long as the petals, cauline leaves cordato-sagittate, stem simple. *E. B. t.* 81.

Limestone pastures in Derbyshire, Yorkshire, and Caernarvonshire. Glen Isla, Clova. ♀. 6—8.

#### 14. HUTCHINSIA Br. (not of Agardh.) *Hutchinsia*.

*Pouch* elliptical, entire; the *valves* keeled, without wings; cells 2-seeded. *Filaments* simple. — Named in honour of the late Miss *Hutchins*, of Bantry, Ireland, who explored most successfully the Botany of her native country, and added many new species to its Cryptogamia.

1. *H. petræa* Br. (*Rock II.*); leaves pinnate entire, petals scarcely longer than the calyx, pouch obtuse at both extremities, stigma sessile. *Lepidium E. B. t.* 111.

Limestone rocks; west of England, and Wales, and Yorkshire. Wall of Eltham churchyard, Kent, probably introduced. ☉. 3—5. — 2—4 inches high. This genus has the *pouch* of a *Teesdalia*, but the stamens of *Thlaspi*: the British species has the appearance of the former; while most foreign ones, if they really belong to the genus, have that of the latter.

#### 15. TEESDÁLIA Br. *Teesdalia*.

*Pouch* emarginate; the *valves* keeled; the *cells* 2-seeded. *Filaments* having a little scale within at the base. — Named in honour of Mr. *Robert Teesdale*, a Yorkshire botanist.

1. *T. nudicaulis* Br. (*naked-stalked T.*); petals unequal. *Iberis E. B. t.* 327.

Sandy and gravelly banks in many places. ☉. 4—6. — *Leaves* almost entirely radical, lyrato-pinnatifid. *Stems* 2—4 inches high,

with sometimes 1—2 small entire or cut *leaves*. *Flowers* white, two of the *petals* nearly three times longer than the other two.

. 16. *IBÉRIS* Linn. Candy-tuft.

*Pouch* emarginate; *valves* keeled and winged; *cells* 1-seeded. *Petals* unequal.—Named from *Iberia*, or *Spain*, where many of the species grow.

1. *I. \* amara* L. (*bitter C.*); herbaceous leaves lanceolate acute somewhat toothed glabrous, flowers racemose, pouch orbiculate with a narrow notch. *E. B. t.* 52.

Chalky fields, rare, but either the outcast from gardens or introduced with seed-corn; now not unfrequent in Oxfordshire and Berkshire. ☉. 7. — *Stems* spreading, often a foot high. *Leaves* very variable in their toothing. Whole plant, as its name imports, very bitter.

Tribe IV. CAKILINEÆ. *Fruit without valves or a dissepiment, jointed, each joint with one or more seeds, all but the upper one often abortive.* Cot. 0= (Gen. 17.)

17. *CAKILE* Gart. Sea-Rocket.

*Fruit* short, angular, of 2, 1-seeded indehiscent joints; the upper joint deciduous bearing an upright sessile *seed*, the lower one with an abortive or pendulous *seed*.—Name: an old Arabic word, applied probably to this or some allied genus.

1. *C. marítima* Willd. (*purple S.*); joints of the pouch two-edged, the upper one with two teeth at the base, leaves fleshy pinnatifid somewhat toothed. *Bunias Cakile* L.: *E. B. t.* 231.

Sandy sea-shores, frequent. ☉. 6, 7. — Bushy; *branches* crooked, and, as well as the whole plant, succulent. *Flowers* purplish, rarely white. *Fruit* thick, fleshy, at length somewhat woody; the upper joint is in reality the *beak* of the fruit, the *pouch* itself being usually abortive.

SUB-ORD. II. NOTORRHIZEÆ. Cotyledons incumbent (o||).

Tribe V. SISYMBRIÆ. *Pod elongated, with the valves convex or keeled, dissepiment linear.* Cot. o||. (Gen. 18—21.)

18. *HÉSPERIS* Linn. Dame's Violet.

*Pod* 4-sided or 2-edged. *Stigma* nearly sessile; the lobes elliptical, connivent. *Cal.* erect.—Named from *ἑσπερος*, the *evening*; at which time the flowers yield a powerful fragrance.

1. *H. matronális* L. (*common D.*); stem erect, leaves ovato-lanceolate toothed, limb of the petals obovate, pods erect toru-



lose their margins not thickened. *H. inodora* L.: *E. B. t.* 731.

Hilly pastures, in several parts of Great Britain, but perhaps always escaped from cultivation. *4.* 5—7.

(*Mulcolmia maritima* Br. has been found near Deal, Kent, by Miss Harvey, and in Jersey by the late Dr. R. Graham, but in neither place truly wild.)

### 19. *SISYMBRIUM* Linn. Hedge-Mustard.

*Pod* rounded or 6-angular; *valves* convex or 3-angled 3-nerved (rarely with the lateral nerves inconspicuous or wanting). *Hypogynous glands* none between the longer filaments. *Seeds* smooth, their *stalks* slender. *Stigma* entire. *Cal.* slightly spreading, equal at the base. — Name: *σισυμβριον*, given by the ancients to several plants, one of which is supposed to be a kind of cress; perhaps from *συν*, *with*, and *βρωμος*, *food*, because so eaten.

1. *S. officinale* L. (*common H.*); pods subulate pubescent close-pressed to the main stalk, leaves runcinate hairy, stem hispid. *Erysimum* L.: *E. B. t.* 735.

Waste places and by way-sides, plentiful. ☉. 6, 7. — One to two feet high, branched. The deep and cut serrated lobes are not always sufficiently decurved to constitute a *runcinate leaf*; the terminal lobe is very large, roundish in the lower leaves, and oblong in the upper ones. *Flowers* very small, pale yellow.

2. *S. Irio* L. (*broad H., London Rocket*); leaves runcinate toothed and as well as the stem glabrous, pods terete nearly erect. *E. B. t.* 1631.

Waste places, chiefly about London, where it covered the ground immediately after the great fire in 1666. Faulkourn, Essex. Berwick-upon-Tweed. Dublin. ☉. 7, 8. — *Flowers* yellow. *Pods* 2 inches long, erect, about four times longer than the pedicels.

3. *S. Sophia* L. (*fine-leaved H., or Flax-weed*); leaves doubly or trebly pinnatifid, lobes linear or linear-oblong, petals shorter than the calyx. *E. B. t.* 963.

Waste places, among rubbish; frequent in England, more rare in Scotland. ☉. 6—8. — Two feet high, branched. *Flowers* small, yellow. *Pods* terete, linear, slender, erect, but not appressed, about three times longer than the somewhat patent *pedicels*.

4. *S. thalianum* Hook. (*common Thale-cress*); leaves somewhat toothed downy, radical ones oblong subpetiolate, stem branched, pods ascending terete with 4 angles. *Arabis* L.: *E. B. t.* 901.

Walls, dry banks, and gravelly soils, common. ☉ Spring and autumn. — Six to ten inches high, slender, with few leaves, and those mostly radical. *Flowers* small, white. *Pods* twice the length of the

spreading pedicels; valves convex with only one conspicuous nerve, as in *Arabis*, with which it agrees better in habit; but the *cotyledons* are incumbent, and the *Pods* are not compressed: from *Erysimum* it differs by the hairs on the leaves being spreading and not appressed.

20. *ALLIARIA* Adans. Garlic-Mustard.

*Pod* rounded; *valves* with one conspicuous nerve and two slender branched nerves or veins. *Hypogynous glands* between the longer filaments. *Seeds* striated, their *stalks* flat and winged. *Stigma* entire. *Cal.* slightly spreading, equal at the base.—Named from *Allium*, or *garlic*, which its leaves resemble in their odour.

1. *A. officinalis* DC. (common G., Jack-by-the-hedge, or Sauce-alone). *Erysimum Alliaria* L.: *E. B.* t. 796.

Hedge-banks and waste places. ♂ 5. 6. — 2—3 feet high, branched. *Leaves* large, veined, heart-shaped, stalked, sinuato-dentate. *Flowers* white. *Pods* erect, on spreading *pedicels*. Were it not for the *seed-stalks*, this might be placed in *Sisymbrium*.

21. *ERYSIMUM* Linn. Treacle-Mustard.

*Pod* 4-sided; *valves* 1-nerved. *Hypogynous glands* usually 2 opposite the placentas and between the longer stamens. *Seeds* smooth not margined, their stalk filiform. *Stigma* entire, or emarginate with the lobes patent. *Cal.* erect. (Pubescence appressed.) — Named from *ερωω*, to *cure*, on account of the supposed virtues of the plant.

1. *E. cheiranthoides* L. (*Worm-seed T.*); leaves lanceolate entire or slightly toothed with stellato-tripartite hairs, pods nearly erect 2—3 times longer than the spreading pedicels, stigma almost undivided nearly sessile. *E. B.* t. 942.

Fields, gardens, and waste places. ☉. 6—8. — One to two feet high, branched. *Flowers* small, yellow. *Glands* between the larger stamens 2-lobed.

2. *E. \* orientale* Br. (*Hare's-ear T.*); leaves cordato-amplexicaul, radical ones obovate, all glabrous glaucous and entire, stigma entire. *Brassica* L.: *E. B.* t. 1804.

Fields and cliffs near the sea; Essex, Suffolk. Sussex. ☉. 5—8. — *Flowers* white or cream-coloured. *Calyx* slightly bisaccate at the base. *Glands* wanting between the longer stamens, but the opposite sepals glandular at the base, thus differing from the genus as limited by C. A. Meyer.

Tribe VI. CAMELINEÆ. *Pouch* with the valves more or less convex or dorsally compressed, dissepiment oval or oblong. *Cot. o||.* (Gen 22—23.)

22. *CAMELINA* Crantz. Gold-of-Pleasure.

*Pouch* obovate or subovate; *valves* inflated, with a prominent

nerve at the base; *cells* many-seeded. *Filaments* simple. — Named from χαμαι, *dwarf* or *humble*, and λων, *flax*.

1. *C.\* sativa* Cr. (*common G.*); pouch obovate margined, valves hemispherical, stigma simple, calyx erect, leaves lanceolate sagittate. *Alyssum* *E. B.* t. 1254.

Fields, occasionally among flax, with which it has been imported. ☉. 6, 7. — *Stem* 2—3 feet high, paniced above, usually more or less pubescent. *Leaves* nearly quite entire, sometimes slightly toothed. *Flowers* small, yellow. *Pouches* very large, on long stalks. *Seeds* scabrous.

### 23. SUBULÁRIA Linn. Awl-wort.

*Pouch* oval, pointless; *valves* turgid; *cells* many-seeded. *Cotyledons* linear, curved. — Named from *subula*, an *awl*; the leaves being subulate or awl-shaped.

1. *S. aquática* L. (*Awl-wort*). *E. B.* t. 732.

Shallow margins of alpine lakes, not very frequent. ☿. 7. — *Roots* of numerous, long, white fibres. *Leaves* few, radical, awl-shaped, 1—3 inches long. *Scape* 2—4 inches high. *Flowers* small, appearing even under water. *Pouch* nearly approaching that of *Draba*, but with more turgid and convex *valves*, having one conspicuous middle nerve, and sometimes two fainter ones. *Embryo* with its *cotyledons* linear, long; and the curvature takes place, not at the very base of the *cotyledons* as in most other *Cruciferae*, but above the base, so that a section made below this exhibits the appearance of four *cotyledons* without a radicle.

Tribe VII. LEPIDINEÆ. *Pouch* with the *valves* keeled or convex; or *fruit* short and indehiscent, 2-celled: *dissepiment* very narrow. *Cot.* o||, rarely (in *Lepidium*) o=. (*Gen.* 24—26.)

### 24. CAPSÉLLA De Cand. Shepherd's Purse.

*Pouch* laterally compressed, obcordato-cuneate (or elliptical); the *valves* navicular, without wings; *cells* many-seeded. — Name: the diminutive of *capsula*, a *capsule* or *little box*.

1. *C. Bursa Pastóris* DC. (*common S.*); pubescent or hairy, stem-leaves sessile lanceolato-sagittate, pouch obcordato-cuneate. *Thlaspi* L.: *E. B.* t. 1485.

Corn-fields and waste places, everywhere, most abundant. ☉. The whole summer. — Very variable, from 3 inches to 1—2 feet high. *Leaves* all generally toothed and rough with hairs; *radical* ones more or less pinnatifid. *Flowers* small.

### 25. LEPÍDIUM Linn. Pepper-wort.

*Pouch* with the *cells* 1-seeded; the *valves* keeled or winged. *Petals* equal. *Cot.* sometimes o=. — Name: λεπίς, a *scale*, from the form of the little pouches.

1. *L. latifolium* L. (*broad-leaved P.*); leaves ovato-lanceolate undivided serrated or entire, pouch oval entire downy with a minute style. *E. B. t.* 182.

Wet shady places, near the sea and salt-marshes; in Norfolk, Essex, and Yorkshire. Weems and Donibristle, in Fifeshire, but apparently only naturalized. *℥.* 7, 8. — *Stem* 2—3 feet high, branched, erect, with large leaves. *Flowers* numerous, small, in many terminal and axillary clustered racemes.

2. *L. \** *Draba* Br. (*Whitlow P.*); leaves amplexicaul broadly oblong or lanceolate entire or toothed, pouch cordate entire at the apex crowned with a style about its own length, valves turgid. *E. B. S. t.* 2683.

Fields and hedges, rare. Swansea; at St. Peter's and Ramsgate, Isle of Thanet; banks of the railway at Forest-hill, Surrey; left bank of the Dee below Chester. *℥.* 5, 6. — *Stem* 8—10 inches to a foot high, branched, with large distant leaves and almost umbellate corymbs of numerous small flowers. *Pedicels* very long.

3. *L. ruderale* L. (*narrow-leaved P.*); flowers diandrous without petals, radical leaves pinnatifid, those of the branches linear entire, pouch roundish-oval emarginate patent with a minute style. *E. B. t.* 1595.

Waste places near the sea, and among rubbish. *⊙.* 5, 6. — The typical form of the plant, with petals and six stamens, is as yet unknown, unless described as a distinct species. *Stem* sometimes a foot high, much branched. *Seed-vessels* numerous. *Cotyledons* incumbent, as in most of this genus; whereas those of its very near affinity, *L. Virginicum*, are accumbent.

4. *L. campêtre* Br. (*common Mithridate P.*); pouch ovate emarginate winged rough with minute scales, style scarcely longer than the notch, cauline leaves sagittate toothed. *Thlaspi L. : E. B. t.* 1385.

Corn-fields and dry gravelly soils; not uncommon in England and Scotland. *⊙.* 5—8. — *Stems* solitary, erect, 10—12 inches high, corymbosely branched above. *Lower leaves* almost spatulate, all slightly pubescent, as well as the racemes and pedicels. *Pouch* curiously scaly.

5. *L. Smithii* Hook. (*smooth Field P.*); pouch ovate emarginate winged glabrous occasionally with a few minute scales on the back, style much exerted beyond the notch, cauline leaves sagittate toothed. — *Lepidium hirtum* Hook. Scot. *Thlaspi hirtum* Sm. (not *L.*): *E. B. t.* 1803.

Borders of fields and hedges in Norfolk and Suffolk. Caernarvonshire and Anglesea. Frequent, particularly in the west of Scotland. Belfast and Dublin, plentiful. *℥?* 4—8. — *Stems* many from the same biennial or perhaps perennial root, 6 inches to more than a foot high, diffuse, irregularly branched. Much resembling the last, but truly distinct. *Pouch* with a much longer style, quite gla-

brous, and smooth or even; except that sometimes on the middle of the back there are a few minute scales. When glabrous it is the *L. heterophyllum* of Bentham, from the Pyrenees; our common form is found, however, in the north-west of France.

## 26. *SENEBIÆRA* De Cand. Wart-cress.

*Fruit* broader than long, 2-celled, without *valves* or wings; *cells* 1-seeded. *Cotyledons* long, linear, curved. — Named in honour of *M. Senebier*, an eminent Genevese physiologist. (We now adopt *Senebiera* in place of *Coronopus*, in consequence of its being generally preferred; but the latter appellation given by Gærtner is certainly the oldest; and although it may not happen to be the precise plant of the ancients, many other received names are in the same predicament.)

1. *S. Coronopus* DC. (*common W., Swine's-cress*); fruit undivided crested with little sharp points, style prominent. *Coronopus Ruellii* Sm.: *E. B.* t. 1660.

Waste ground, not unfrequent in England. Rare in Scotland. ☉. 6—9. — A much branched spreading weed. *Leaves* bipinnate, their segments linear. *Flowers* very small, white, in lateral axillary corymbs. *Pouch* large in proportion to the flower, curiously crested. *Cotyledons* (in the whole genus) nearly as in *Subularia*.

2. *S. didyma* DC. (*lesser W.*); fruit emarginate of two wrinkled lobes, style very short. *Coronopus* Sm. *Fl. Brit.* *Lepidium* *E. B.* t. 248.

Waste ground near the sea, in the south and south-west of England; about Exeter, Truro, Penrhyn, and Milfordhaven. Shore near Caernarvon. South of Ireland. ☉. 7—9. — *Leaves* once or twice pinnate.

Tribe VIII. ISATIDÆÆ. *Fruit short, 1-celled, 1-seeded, with keeled scarcely dehiscent valves. Cot. o||.* (Gen. 27.)

## 27. *ISÁTIS* Linn. Woad.

*Fruit* 1-celled, 1-seeded, laterally compressed; *valves* keeled or winged, eventually separating at the apex. *Hypogynous glands* between the longer stamens. — Name: *ισαρίς* of the Greeks.

1. *I. \*tinctória* L. (*Dyer's W.*); fruit glabrous obovate-oblong about three times longer than broad, radical leaves oblong crenate, those of the stem sagittate. *E. B.* t. 97.

Cultivated fields, about Ely, Durham, &c. ♂. 7. — *Flowers* yellow. Cultivated for the sake of the blue dye which it yields, hence called *Glastum* by the Romans, from *glas*, the Celtic for *blue*. Woad seems to take that name from *Guadam*, now *Gualdo*, in Italy, where it was formerly extensively cultivated.

SUB-ORDER III. ORTHOPLOCEÆ. Cotyledons conduplicate ( $0 > >$ ).

Tribe IX. BRASSICÆ. *Pod elongated. Dissepiment narrow.*  
Cot.  $0 > >$ .

## 28. BRÁSSICA Linn. Cabbage, Turnep, Navew.

*Pod* 2-valved (with a sterile, or one- or several-seeded beak).  
*Seeds* in a single row. *Calyx* erect.<sup>1</sup> — Name derived from the Celtic *bresic* (modern Gaelic *praiseach*), a kind of cabbage, or rather pottage, made of it.

\* *Valves of pod 1-nerved, veiny; beak usually sterile.*

1. B. *olerácea* L. (*Sea C.*); root caulescent cylindrical fleshy, all the leaves glabrous glaucous waved and lobed, upper ones oblong sessile. *E. B.* t. 637.

Cliffs by the sea: Devonshire, Dover, Wales, Cornwall, Yorkshire, and in the Frith of Forth, ♂. 5—8. — Varying in height 1—2 feet. *Leaves* thick, subcarinose, the uppermost undivided, but toothed. *Flowers* large, yellow. — The origin of our garden *Cabbage*.

2. B. \**Nápus* L. (*Rape*, or *Cole-seed*); leaves glabrous somewhat glaucous especially on the under side, lower ones lyrate toothed, upper cordato-lanceolate amplexicaul, pods spreading. *E. B.* t. 2146.

Corn-fields and waste ground, frequent in England. ♂. 5, 6. — 1—2 feet high. *Root* slender or fusiform. *Lobes* of the lower leaves crenate, upper leaves entire more glaucous. *Petals* yellow, rather small. *Pods* torulose. — The slender-rooted variety is cultivated for the oil produced by its seeds, which after pressure are formed into cakes, and used as manure and for feeding cattle; but the slender-rooted variety of *B. campestris* is much more employed for the same purpose on the Continent, under the name of *Colsa*.

3. B. *campestris* L. (*common wild N.*); upper stem-leaves cordate acuminate amplexicaul glabrous, lower and radical

<sup>1</sup> As the distinction between this genus and the next is purely artificial, some Botanists have proposed to unite them along with *Moricandia* and *Diplotaxis*: on the other hand, some writers of local floras have proposed to neglect the characters obtained from the calyx, and place the species of either which have a single nerve to the valves of the pod in *Brassica*, and those with three or more nerves in *Sinapis*. But this arrangement is often more unnatural than the old one of Linnaeus, and none can be tolerated, if a division takes place, which removes *Sinapis nigra* from that genus, of which it is the acknowledged type. We would prefer restricting *Brassica* to our four first species, and *Sinapis* to *S. nigra*, removing *S. alba* to *Ramphospermum*, &c.; but many species cannot thus be disposed of in already recognised genera, and besides it is almost practically impossible to distinguish between one nerve with two strong longitudinal, nearly straight, or slightly branched veins, and three nerves with connecting veins.

ones lyrate dentate subhispid glaucous, pods erect. *E. B.* t. 2234.

Corn-fields and sides of rivers and ditches, in many places. ☉ or ♂. 6, 7. — *Root* fusiform, slender and annual in the wild plant, often turnep-shaped and biennial in the cultivated one. *Stem* hispid below. *Flowers* yellow. *Pod* cylindrical or obscurely 4-angular; *seeds* forming slight prominences; beak awl-shaped, striated, sometimes with a single seed. — Apparently the origin of the *Swedish Turnep* of our agriculturists, and in Scotland it has never been found except where the *Swedish Turnep* had been previously cultivated.

4. *B. \*Rápa* L. (*common T.*); root orbicular or oblong fleshy, radical leaves lyrate scabrous not glaucous, lower stem-leaves incised, upper ones cordato-ovate acuminate amplexicaul smooth. *E. B.* t. 2176.

Borders of fields and waste places. ♂. 4—7. — Varying exceedingly in height, according to soil. Upper leaves subglaucous; all more or less toothed. Although the three last are readily distinguished in cultivation by their radical leaves alone, there are strong grounds for considering all to be varieties, as they scarcely differ in other respects.

\*\* *Valves of pod 3-nerved; beak 1—3-seeded.*

5. *B. Monénsis* Br. (*Isle-of-Man C.*); leaves pinnatifid, stems prostrate nearly leafless and glabrous, pods compressed or slightly 4-angled. *Sisymbrium* L.: *E. B.* t. 962.

On the isles and shores of the Clyde, and on both sides of the Irish Channel, Argyleshire, Ayrshire, &c.; Isle of Man. ♀. 5—8. — *Leaves* usually glabrous, except on the *petioles*. *Stems* slightly hispid, greedily eaten by sheep and cattle, and probably deserving of being cultivated as fodder.

6. *B. Cheiránthus* Vill. (*Wall-flower C.*); leaves stalked hispid all deeply pinnatifid, lobes oval oblong unequally toothed, in the upper one linear, base of the stem hispid, pods cylindrical. *Sinapis Koch*: *E. B. S.* t. 2821.

Sands of St. Aubin's Bay, Jersey. ♂. 6—8. — Distinguished from *B. Monensis* principally by the upright and more leafy and hispid stem. Mr. Borrer is of opinion that it does not differ.

## 29. SINÁPIS Linn. Mustard.

*Pod* 2-valved (with a sterile or one- or several-seeded beak). *Seeds* in a single row. *Cal.* patent. — Named from the Greek *σῶνις*, the *common Mustard*, which again Théis derives from the Celtic *Nap* (modern Gaelic *Neup*), a *Turnep*.

\* *Valves of pod 1-nerved.*

1. *S. nígra* L. (*common M.*); pods appressed glabrous tetra-

gonous, beak sterile short-subulate, upper leaves linear-lanceolate entire glabrous. *E. B. t.* 969. *Brassica Koch.*

Under hedges and in waste places, in England, very rare in Scotland (if wild). ☉. 6—9. — *Stem* 3—4 feet high. *Lower leaves* large, lyrate, rough. *Pod* with a short empty beak, or rather only the persistent *style* and *stigma* at its summit; its *valves* bluntly but so strongly 1-nerved as to make it quadrangular, the four sides being flat and without any prominent veins. — The seeds yield the mustard of our tables; of which the best is that from which the oil has been expressed, as originally prepared by Mrs. Clements of Durham.

2. *S. incána* L. (*hoary M.*); pods appressed terete prominently veined with a short 1-seeded beak, leaves lyrate hispid, cauline ones linear-lanceolate, stem much branched. *Erucastrum Koch*: *E. B. S. t.* 2843.

On the Quenvais, Jersey, but rare. ♂. 7, 8. — *Pods* glabrous or hairy, with a glabrous beak and single seed. *Seeds* ovate, compressed; on which account it has been removed to the genus *Erucastrum*, but it is less allied to *B. Erucastrum*, the type of that genus, than to *Sin. nigra*.

\*\* *Valves of pod* 3—5-nerved.

3. *S. arvensis* L. (*wild M., Charlock*); pods glabrous with many angles turgid and knotty longer than the slightly compressed beak, stem and leaves bristly. *E. B. t.* 1748.

Corn-fields, too frequent. ☉. 5—8. — *Stem* 1—2 ft. high, rough. *Flowers* rather large, yellow. *Calyx* very spreading. *Beak* of the pod usually empty, sometimes with one seed.

4. *S. álba* L. (*white M.*); pods hispid turgid shorter and slightly narrower than the flat ensiform beak, leaves pin-natifid. *E. B. t.* 1677.

Waste places, frequent in England; more rare in Scotland. ☉. 6, 7. — *Stem* 1—1½ ft. high, sparingly hairy or glabrous. *Leaves* usually glabrous, the lobes variously cut and toothed, or erose. *Flowers* large, yellow. Well distinguished from the other British species by its long, thin beak, which contains a single seed.

### 30. DIPLÓTÁXIS De Cand. Rocket.

*Pod* linear, compressed (with usually an empty beak), 2-valved; the *valves* slightly convex, 1-nerved. *Seeds* (oval or oblong) in two rows. *Calyx* patent. — Named from διπλος, double, and ραξίς, a series, in allusion to the two rows of seeds.

1. *D. tenuifólia* DC. (*Wall R.*); pods shortly beaked erect, pedicels spreading, stems erect leafy, leaves lanceolate very acute pinnatifid or bipinnatifid glabrous. *Sisymbrium L.*: *E. B. t.* 525. *Sinapis Br.*

Old walls and heaps of rubbish about great towns, in the south,



south-west, and east of England; as London, Bristol, Yarmouth, Chester. St. David's, Fifeshire, but introduced with ballast. 2. 6—9. — *Root* thick. *Stem* 1—1½ ft. high, glabrous, almost woody at the base. *Flowers* large, yellow. This plant smells disagreeably.

2. *D. murólis* DC. (*Sand R.*); pods shortly beaked erect, pedicels spreading, stem herbaceous spreading leafy only at the base, leaves sinuate glabrous. *Sisymbrium* L.: *E. B.* t. 1090. *Sinapis* Br.

Sandy barren fields near the sea, in the south and south-west of England, Isle of Thanet, and below Bristol. Edinburgh and Dunfermline, but not truly wild. ☉. 8, 9. — Very like the preceding, but annual, and much smaller and less leafy.

*Tribe X. VELLÆ.* *Pouch with the valves convex; dissepiment broad. Cot. o > >.* (Gen. 31.)

### 31. VÉLLA Linn. Cress-rocket.

*Pouch* swollen, 2-celled, with a dilated, flat, winged style, twice as long as the valves. *Seeds* 4 in each cell. *Cal.* erect. — Named from *veler* in Celtic (in modern Gaelic *biolar*), the cress.

1. *V. \*ánua* L. (*annual C.*); leaves bipinnatifid, fruit pendulous. *E. B.* t. 1442. *Carrichtera Vellæ* DC.

Sandy fields. Salisbury Plain: *Lawson*. ☉. 6. — Not found since the time of Ray.

*Tribe XI. RAPHANÆ.* *Fruit with the pod or lower part abortive and stalk-like, consisting of a beak without valves, divided transversely into 1-seeded cells sometimes separating. Cot. o > >* (Gen. 32, 33.)

### 32. CRÁMBE Linn. Kale.

*Fruit* without valves, the upper joint globose, deciduous, bearing one inverted seed upon a stalk arising from the bottom of the cell; lower joint resembling a pedicel. — Name: *κράμβη* of the Greeks.

1. *C. marítima* L. (*Sea K.*); longer filaments forked, fruit pointless, leaves roundish sinuated waved toothed glaucous, and as well as the stem glabrous. *E. B.* t. 924.

Sea-coast in sandy or stony soils in various places, but not very general. 2. 6. — *Root* thick, fleshy. *Flowers* white. Well known as an excellent culinary vegetable when cultivated and blanched.

### 33. RÁPHANUS Linn. Radish.

*Fruit* without valves or a dissepiment, with a long style, several-seeded. *Cal.* erect. — Name: *ρα*, quickly, and *φαινομαι*, to appear; from its rapid vegetation.

1. *R. Raphanistrum* L. (*wild R.*, or *jointed Charlock*); leaves simply lyrate, fruit jointed, style 2—3 times longer than the last joint. *E. B.* t. 856.

Corn-fields, frequent. ☉. Summer and autumn. — *Stem* 1—1½ foot high. *Leaves* stalked, rough. *Flowers* yellow, rarely reddish, veined.

2. *R. maritimus* Sm. (*Sea R.*); leaves interruptedly lyrate, fruit jointed striated, style scarcely longer than the last joint. *E. B.* t. 1643.

Beachy-head, Sussex. Jersey and Guernsey. Sea-shore in Bute, Argyleshire, and Galloway; Scotland. ♂. 6. — *Stem* 3—4 feet high. All the *leaves* rough and the lobes toothed. *Flowers* rather large, yellow. “Pods larger than in the preceding, and (especially when dry) channelled with fewer, broader, and deeper furrows, and sharp intermediate prominences; the beak also is smoother, as is the upper part of the plant generally.” *J. E. Bowman*. Is it really a distinct species? *R. Landra* DC. only differs by the longer style, and is intermediate. The character derived from the leaves sometimes disappears.

## ORD. VII. RESEDACEÆ *De Cand.*

*Calyx* of several narrow sepals. *Petals* unequal, mostly laciniated. *Stamens* 10—24, inserted upon a glandular irregular disk. *Ovary* sessile, 3—4-lobed, 1-celled, with 3—4 parietal placentas bearing many *seeds* (or of 4—6 verticillate 1-celled carpels). *Stigmas* sessile, one to each placenta and alternate with it. Fruit opening in an early stage at the extremity along the line of the placentas, — *Reseda odorata* is the sweet Mignonnette of our gardens.

### 1. *RESÉDA* *Lin.*, Dyer's Rocket. Mignonnette.

*Cal.* of 1 piece, many-parted. *Pet.* more or less divided and unequal. *Caps.* of 1 cell, opening at the top. *Stigmas* 3—4. — Name from *resedo*, to *calm*, from its supposed sedative qualities.

1. *R. Lutéola* L. (*common D.*, *Yellow-weed* or *Weld*); leaves long lanceolate undivided, calyx 4-partite, stigmas 3. *E. B.* t. 320.

Waste places; frequent on a chalky soil. ☉. 6—8. — *Stem* 2—3 feet high, branched. *Racemes* long, of numerous yellowish *flowers*, with prominent *stamens*. *Nectary* large, green, crenate, on the upper side of the *flower*; 3 of the *petals* 3-cleft, segments linear; two lower *petals* entire; *capsules* broad, depressed. — Used in dyeing woollen stuffs yellow.

2. *R. lútea* L. (*base D.*, *wild M.*); leaves 3-cleft or pinnatifid,

calyx 6-partite, petals 6 very unequal, stigmas 3. *E. B. t.* 321.

Waste places and chalky hills. ☉ or ♀. 6—8. — *Leaves* very variable, some bipinnatifid, lower ones often pinnated. *Flowers* deeper yellow than in the last. Two upper *petals* with 2 wing-like lobes, lateral ones unequally bifid, lower ones entire. *Capsule* oblong, wrinkled.

3. *R. \*fruticulosa* L. (*shrubby base D.*); leaves all pinnate waved glaucous, calyx 5-partite, petals 5 nearly equal trifid, stigmas 4. *E. B. S. t.* 2628.

Cornwall. Weston-super-mare, Somersetshire. Unenclosed sand-hills, Bootle, 4—5 miles from Liverpool. Coventry, Warwickshire. The following stations, either for this or *R. alba*, have also been communicated:—about Dublin; between Cork and Glanmire; and near Gosport. ♂ or ♀. 6. — *R. alba* of Continental writers chiefly differs from this by having the *calyx* 6-partite, and 6 *petals*: Mr. Borrer, however, can only distinguish the *R. alba* of the Linnean Herbarium by its shorter flower-stalks and thence more cylindrical *racemes*, and the terminal lobe of its *leaves* more similar to the rest (less dilated than that of *R. fruticulosa*):—a specimen from Mr. Borrer has the *calyx* 5-partite.

## ORD. VIII. CISTACEÆ Juss.

*Sepals* 3, with a twisted æstivation, with usually 2 outer smaller ones. *Petals* 5, deciduous, with a twisted and crumpled æstivation. *Stamens* numerous. *Ovary* 1, 1- or many-celled. *Style* 1. *Stigma* capitate, simple. *Capsule* of 3—5, rarely 10 valves. *Seeds* numerous. *Embryo* spiral or curved, in a mealy albumen. — Shrubs or herbaceous plants abounding in Southern Europe and Northern Africa, with handsome, generally fugacious, flowers. — *Cistus Creticus* affords the balsam called *Gum Ladanium*. The stamens of *Helianthemum* expand after being suddenly compressed between the finger and thumb.

### 1. HELIANTHEMUM Tourn. Rock-rose.

*Sep.* 5, of which 3 are equal and 2 outer ones smaller. *Caps.* 3-valved. — Named from ἥλιος, the sun, and ανθος, a flower; the same as *Helianthus*.

1. *H. cænum* Dun. (*hoary dwarf R.*); shrubby without stipules, leaves opposite ovate or oblong petiolate flat hoary beneath, racemes terminal bracteated, style twisted at the base reflexed, at the apex inflexed, seeds blackish. *Cistus* L. *C. marifolius*, *E. B. t.* 396.

Rare; alpine rocks in the north of England, Lancashire, Westmoreland, on Cronkley Fell in Yorkshire, and in Wales. ♀. 5—7. — A low shrubby plant, with hoary leaves, and rather small yellow flowers.

*Cistus marifolius*, *Anglicus*, *Ælandicus*, and *Italicus* of Linnæus appear all to be mere *vars.*

2. *H. guttatum* Miller (*spotted annual R.*); annual erect, leaves oblongo-lanceolate or linear, the lower opposite without stipules, the upper alternate, style straight very short. — *α.* racemes without bracteas. *Cistus L.: E. B. t. 544.* — *β.* racemes bracteated. *H. Breweri Planch.* in *Lond. Journ. Bot.* iii. p. 618. t. 21.

Very rare. *α.* Three-Castle Head, Cork. Jersey. *β.* Holyhead mountain. ☉. 6—8.

3. *H. \*ledifolium* Willd. (*Ledum-leaved R.*); herbaceous slightly downy with stipules, leaves lanceolate, flower-stalks solitary opposite to the leaves shorter than the calyx erect in fruit, styles straight, capsule polished. *Cistus L.: E. B. t. 2414.*

Very rare; on Brean downs, Somersetshire; *Huds.* 4. 6, 7. — We have never seen British specimens of this plant, and it is generally supposed that Hudson mistook *H. polifolium* for it. It is certainly the *Cistus Niloticus* of Linnæus, his *C. ledifolius* being glabrous, and probably the cultivated state of the plant.

4. *H. vulgare* Gärt. (*common H.*); shrubby procumbent stipuled, leaves opposite ovate or oblong nearly flat green above, racemes solitary terminal bracteated, pedicels elongated deflexed in fruit, style bent at the base somewhat clavate at the apex, seeds black. *Cistus Helianthemum L.: E. B. t. 1321.* *C. tomentosus, E. B. t. 2208.* *C. Surrejanus L., (petals lanceolate often cut): E. B. t. 2207.*

Frequent in dry pastures, especially in a chalky or gravelly soil. 4. 7—9.

5. *H. polifolium* Pers. (*white R.*); shrubby procumbent stipuled hoary, leaves opposite ovato-oblong or oblong-linear more or less revolute at the edge, racemes solitary terminal bracteated, pedicels elongated and deflexed in fruit, style bent at the base, somewhat clavate at the apex, seeds black. *H. Apenninum DC. Cistus L.: E. B. t. 1322.*

Rare; in the south of England. Brean downs, Somersetshire; Torquay and Babbicombe, Devonshire. 4. 7, 8. — *Flowers white.* In gardens all intermediate states may be observed between this and the last, of which, with about 50 other supposed species, it is probably a mere variety.

#### ORD. IX. VIOLACEÆ De Cand.

*Sepals* 5, persistent. *Petals* 5, unequal and the lower one spurred at the base, or sometimes equal. *Stamens* 5. *Anthers* generally with a dilated appendage at their extremity; 2 of

them (in the genera with irregular flowers) usually appendiculate at the base. *Ovary* 1-celled, with 3 parietal placentas, bearing several seeds. *Style* 1. *Capsule* 1-celled, 3-valved, bearing the seeds along the middle of each valve. *Embryo* straight, about as long as the copious fleshy albumen. — Herbs or shrubs, with stipuled leaves, and powerfully emetic and purgative roots; as *Viola Ipecacuanha*, *Ionidium parviflorum* (which has been satisfactorily ascertained to be the famous "Cuychunchulli" or *Ionidium Marcucii* of Dr. Bancroft), &c.

### 1. *VIOLA* Linn. Violet.

*Cal.* of 5 sepals extended at the base. *Pet.* 5, unequal, the under one spurred at the base. *Anthers* connate, 2 of them spurred behind. — Name of Celtic origin; in modern Gaelic *fail* signifies a smell, and *fail-chuach*, a violet.

\* *Stemless*, or nearly so.

1. *V. hirta* L. (*hairy V.*); leaves cordate and as well as the petioles and capsules rough with hairs, sepals obtuse, lateral petals usually with a hairy central line, anther-spurs linear-oblong, stigma glabrous uncinately convex above, creeping scions none. *E. B. t.* 894.

Woods and pastures in England, principally in a chalky or limestone soil. Rare in Scotland, and only in Dumfriesshire and on the eastern side. 2. 4, 5. — *Stems* usually several, short, decumbent at the base, but not at all stoloniferous. *Stigma* with an oblique pointed beak in this and the five following species. *Flowers* pale, rather dingy blue, scentless. Nearly allied to *V. odorata*, and chiefly distinguished by the want of creeping scions, by the greater hairiness of the plant, the hairs on the petioles always spreading, and the spur of the petals compressed not channelled. *Bracteoles* usually inserted below the middle of the peduncle, sometimes above the middle. The *flowers* of this, and several of the other species, are often destitute of petals.

2. *V. odorata* L. (*sweet V.*); leaves cordate and as well as the petioles and capsules pubescent or nearly glabrous, sepals obtuse, lateral petals usually with a hairy line, anther-spurs lanceolate obtuse decurved, stigma uncinately convex above, scions creeping. *E. B. t.* 619.

Woods, barks, and pastures; frequent in England. Very rare in Scotland, and perhaps only naturalized; as woods near Slateford and Collington, Edinburgh; and near the Castle Rock, Stirling. Hedges between Killiney Hill and Bray, Ireland. 2. 3, 4. — *Stems* truly sarmentose as in the strawberry. *Leaves* and *flowers* from the crown of the root. *Flowers* deep purple, sometimes reddish-purple or lilac, often white, fragrant. Hairs on the petioles short and deflexed, rarely long and spreading as in *V. hirta*. *Bracteoles* usually inserted above the middle of the peduncle, sometimes about the middle or even below

it. The white-flowered variety oftener than the purple one wants the hairs on the lateral petals, when it is the *V. imberbis* Leight., and sometimes, as well as the lilac variety, has the sepals ciliated.

3. *V. palustris* L. (*Marsh V.*); glabrous, leaves cordate or reniform veiny beneath, sepals obtuse, spur very short, lateral petals scarcely hairy, anther-spurs short and rounded, capsule glabrous, stigma flat above, scions none. *E. B.* t. 444.

Bogs and marshy grounds, less frequent in the south; abundant in Scotland, and even at a very considerable elevation. *Æ.* 4—7. — *Flowers* very pale blue with purple streaks. The *petals* are slightly hairy on one side at the base, but the lateral ones have not a distinct line of hairs. *Anthers* with the cells nearly parallel, not slightly diverging below as in the two preceding species.

**\*\* Furnished with an evident stem.**

4. *V. canina* L. (*Gerard's*, or *Dog V.*); primary stem short and bearing leaves only, lateral ones or flowering branches numerous ascending simple, leaves broadly cordate more or less acute, stipules ciliato-dentate, sepals acuminate. *E. B.* t. 620. *V. sylvatica* Fries. *V. flavicornis* Forster in *E. B. S.* t. 2736.

Woods, banks, and dry pastures, frequent, also in clefts of rocks at a considerable elevation. *Æ.* 4—8. — Variable in regard to size. In mountainous situations the blossoms are often numerous, and large in proportion to the size of the plant. *Flowers* scentless blue, purple, or sometimes almost white. *Bracteoles* subulate and entire in this and the two following species. The whole plant is usually glabrous, but sometimes the flowering stems have a minute deflexed pubescence. "Crown of the root prolonged into a short central erect barren persistent stem. Flowering branches (stems?) lateral, undivided, trailing, annual. Leaves thin, flexible." *H. Watson*. The stigma has a horizontal point or beak in this and the next species; but in *V. canina* it is usually longer and bent up at the point so that the lower edge of the orifice is on a level with the summit: in *V. pumila* the beak is shorter, nearly straight, the orifice usually much larger and its lower edge opposite to the middle of the stigma; but this character varies a little according to the period at which the stigma is examined: in *V. pumila* the stigma is generally more glabrous, sometimes almost quite glabrous.

5. *V. pumila* Vill. (*Dillenius' V.*); primary and lateral "stems elongated flower-bearing repeatedly divided" (*H. W.*), leaves ovate or oblong obtuse cordate at the base, stipules ciliato-dentate or entire, sepals acuminate. *V. flavicornis*, *Sm.* *V. canina* *Bab.* (not *Ger.* nor *Linn.*).

Heathy, dry, or sandy places, perhaps not uncommon. *Æ.* 4—8. — The name *canina* having been given by Gerard to the last species, apparently as a translation of the common English name, and being

merely adopted by Linnæus from him, in preference to *sylvestris* given to it by Parkinson, cannot be applied to the present species which was confounded with it by Linnæus, and was first noticed by Dillenius. Generally smaller than the last species and quite glabrous or most minutely pubescent. *Flowers* paler, sometimes white. "*Branches* annual at their extremities, with persistent or suffruticose bases, ultimately becoming somewhat woody and cæspitose. *Leaves* thickish, rigid." *H. Watson*. "A series of buds are, towards the autumn, formed in the axils of the lowermost leaves of each flowering branch; of these it sometimes happens that one or two only develop into new flower-bearing shoots in the succeeding spring, the remainder being then found below or above the base of the new flowering shoot, according to the position of the bud from which it has been produced. Later in the season the rest of the buds elongate into branches, producing fruit, but without expanding or even forming a corolla: this last is also at the same time exhibited by the older branches. The old flowering stem dies in the winter down to the point at which the buds just mentioned are formed, and thus it is always found above the point from which the new one springs; while in *V. canina* the reverse is the case, the dead flowering stems always appearing below the new ones." *W. H. Purchas*. Of course these observations do not apply to adventitious leaf-buds, which may spring low down from the stem or even the root.

6. *V. lactea* Sm. (*Cream-coloured* or *Haller's V.*); "stem dividing into procumbent or sub-erect flowering branches, leaves ovate-lanceolate scarcely cordate at the base" (*H. W.*), stipules ciliato-dentate or entire, sepals acuminate. *E. B. t.* 445.  $\beta$ . flowering branches elongated.

On mountains and boggy heaths. Near Tunbridge Wells; Lincolnshire; Bottisham Fen, Cambridgeshire; Sussex; Cornwall. Near Peebles? Brandon Mountain, Kerry, Ireland.  $\beta$ . Boutham-lane; Sussex; Cornwall. 2. 5.—A small plant like the wild state, sometimes a foot high when cultivated, usually, in the two last, having several flowering simple branches from near the root: these seem scarcely so persistent as in the last species, from which it may not be really distinct. *Leaves* almost lanceolate and narrower, usually attenuated at the base, but sometimes retuse. *Stipules* usually much shorter than the *petioles*. *Stigma* very slightly curved, almost clavate and quite smooth, without any horizontal beak, the orifice oblique and very large. *Flowers* pale blue or almost white. De Gising makes it a var. of *V. montana* of Linn.; but the Swiss specimens of that species have a solitary erect stem, large stipules, and an uncinate stigma, of which the point is recurved and the orifice very small. Perhaps the white variety of the last ought to be referred to the present species; but our specimens are very imperfect.

7. *V. tricolor* L. (*Pansy V.* or *Heart's Ease*); root annual or fusiform, stem angled branched, leaves oblong deeply crenate, stipules lyrate-pinnatifid, spur of the corolla about as long as the produced base of the calyx. —  $\alpha$ . petals longer than the

calyx. *E. B.* t. 1287. *V. Curtisii* Forst. in *E. B. S.* t. 2693. — $\beta$ . petals shorter than the calyx. *V. arvensis* Murr. *E. B. S.* t. 2712.

Banks and cultivated fields, frequent.  $\beta$ . Corn-fields. ☉, ♂, or ♀ (perhaps only when cultivated). *Fl.* the whole summer. — Extremely variable, especially in the size and colour of its flowers, yellow in *V. Curtisii* of Forster, which we certainly consider belongs to this and not to *V. lutea*. *Stigma*, in this and the following species, large, capitate, obliquely perforated.

8. *V. lútea* Huds. (*yellow Mountain V.*, or *yellow Pansy*); perennial diffuse and filiform below-ground, stem branched and very slender at the base, leaves oblong-ovate or ovate crenate, stipules subpalmato-pinnatifid, spur of the corolla about as long as the produced base of the calyx. — $\alpha$ . petals all yellow or the two upper purple. *E. B.* t. 721. — $\beta$ . petals all purple. *V. amœna* Sym.

Mountainous pastures. Frequent in Wales, the north of England and Scotland;  $\alpha$  and  $\beta$  often growing together. ♀. 5—9. — Under-ground stems or branches resembling long thread-like creeping roots; true stems also slender, but particularly so at the base; both very different from what we have always seen in *V. tricolor*, and by which this species is in some cases only to be distinguished. The flowers are generally of a pale yellow or sulphur colour, much larger than is usual in wild states of *V. tricolor*.

## ORD. X. DROSERACEÆ, *De Cand.*

*Sepals* usually 5, persistent, equal. *Petals* as many as the sepals. *Stamens* free, equal in number with the petals or 2—4 times as many; *anthers* dehiscing longitudinally. *Ovary* 1. *Styles* or sessile *stigmas* several. *Capsule* 1-celled, with 3—5 placentas and 3—5 valves, loculicidal; *valves* bearing the seeds along their middle. *Seeds* never comose. — Herbs of marshy ground, with the leaves all radical or stem-leaves, alternate. In *Dionœa* the leaves are furnished with 2 remarkable spreading lobes fringed with bristles, and jointed as it were in the middle: the lobes are highly irritable, on being touched in the middle by an insect they close upon and destroy the captive. Some foreign genera have from 2—5 cells to the fruit: in *Dionœa* there is but one, but the seeds are all at the base of the indehiscent capsule: some have but one style; so that the above character chiefly applies to British plants.

1. DROSERA. Styles filiform. Leaves clothed with glandular hairs.
2. PARNASSIA. Stigmas sessile. Leaves glabrous.



**SUB-ORD. I. DROSEREÆ.** *Styles (or style) elongated. Stamens hypogynous, as many as the petals. Capsule 1(—3)-celled, 3—5-valved. Seed with a minute embryo at the base of a copious fleshy albumen. Leaves clothed with beautiful glandular hairs, and having a circinate vernation.*

1. *DROSERÁ* Linn. Sun-dew.

*Styles 3—5, variously divided, usually bipartite and resembling 6—10 distinct styles. Capsule 1-celled, many-seeded.* — Name derived from *δρῶρος*, *dew*, the glands exuding a pellucid fluid, which makes this plant appear as if covered with dew. In the Latin of the middle ages (for it was unnoticed by the ancients) it is called *Ros solis*, a mere translation of the common name. Nearly all the species stain the paper in which they are placed, of a purple colour.

1. *D. rotundifolia* L. (*round-leaved S.*); leaves radical obovato-orbicular spreading, petioles hairy, seeds chaffy. *E. B. t. 867.*

Bogs and moist heathy ground, frequent. 4. 7, 8. — In all our species the leaves are covered with red pedunculated viscid glands, which retain insects; the flowers are racemed, small, secund, on a scape; and the styles (3—4) are bipartite. *Stigmas* entire, clavate. *Petals* almost always 6.

2. *D. longifolia* L. (*spathulate-leaved S.*); leaves radical oblong-spathulate obtuse or obovate on long glabrous erect petioles, seeds with a compact rough coat not chaffy. *E. B. t. 868.*

Bogs and moist heathy ground, not uncommon; more frequent in the south than in the north. Isle of Skye. South of Ireland. 4. 7, 8. — Well distinguished from the following, by its rough, and not loose, coat adhering firmly to the rest of the seed, a character long ago observed and figured by Dreves and Hayne. *Petals, sepals, and stamens* often 6 and sometimes 8 in this and the next species. Limb of the leaf scarcely longer than 5—6 times its breadth, sometimes not twice longer, gradually tapering into the glabrous petiole. *Stigmas* bifid.

3. *D. A'nglica* Huds. (*great English S.*); leaves radical linear-spathulate obtuse on long glabrous erect petioles, seeds with a loose chaffy coat. *E. B. t. 869.*

On bogs in several parts of Scotland. Near Warrington, Lancashire; Bedfordshire, Norfolk, Hampshire, Devon (*Dr. Cullen*), and probably in several other counties. 4. 7, 8. — This has much longer and narrower leaves than the last, and would better deserve the name of *longifolia*: the limb is usually at least 10—12 times longer than broad, and is so attenuated into the petiole that the commencement of the latter is chiefly distinguished by being glabrous. *Scape* much taller than the last.

SUB-ORD. II. PARNASSIÆ. *Stigmas* 4, sessile, in a line with the *placentas*. *Stamens* 5, perigynous. *Capsule* 1-celled, 4-valved. *Seeds* without *albumen*. *Leaves* glabrous.

2. PARNASSIA Linn. Grass of Parnassus.

*Stamens* with as many intermediate nectaries fringed with globular-headed filaments. — Named from *Mount Parnassus*, to which place, indeed, the plant is by no means peculiar; it is called by Dioscorides *αγρωστis εν τῷ Παρνασσῷ*.

1. *P. palustris* L. (common *G.*); bristles of the nectary 9—13, leaves cordate cauline one amplexicaul. *E. B. t.* 82.

Bogs and wet places; frequent in the North. *℥.* 8—10. — *Leaves* mostly radical, on long footstalks, cordate, entire, nerved; one on the stem (a *bractea*?) below the middle, sessile. *Stem* angular, from 1 inch to usually 8—10 inches high. *Flower* solitary, terminal, large, yellowish-white, handsome. *Petals* broadly obovate. *Nectaries*, each an obcordate scale, opposite the petals, fringed along the margin with white hairs which are terminated by a yellow pellucid globular gland. The place of the present genus is not settled: it differs nearly as much from the true *Droseraceæ* as it does from all other Orders: it resembles some violets in its leaves, and the *Saxifraga parnassiaefolia* in aspect, but it departs from the *Saxifragaceæ* by the position of the stigmas: from *Hypericaceæ* it is now removed on account of the never opposite leaves, sessile stigmas, and several other characters. Artificially it ought to find a place among Dr. Lindley's *Violaes*, very near *Tamaricaceæ*.

ORD. XI. POLYGALACEÆ Juss.

*Sepals* 5, the 2 inner generally large and petaloid. *Petals* 3—5, more or less united with the filaments of the *stamens*, which form 2 parcels, each with 4 *anthers*, opening by pores at the apex. *Ovary* 1, usually 2-celled. *Style* and *stigma* 1. *Fruit* a capsule, or drupaceous, 2- or 1-celled; dehiscence loculicidal. *Seeds* solitary, pendulous, often with a caruncle at the base. — Shrubs or herbs. *Leaves* without *stipules*. *Flowers* usually racemose. — Several of this family are used medicinally. The leaves are bitter, the roots more or less milky. *Polygala Senega* is the snake-root of N. America. *Krameria* of Peru is powerfully astringent, and usually referred here.

1. POLYGALA Linn. Milkwort.

*Cal.* with 2 sepals, wing-shaped, and coloured. *Pet.* combined by their claws with the filaments, the lower one keeled. *Caps.* compressed. *Seeds* downy, crested at the *hilum*. — Name, πολυ, much, and γαλα, milk, from some fancied property in the plant.

1. *P. vulgaris* L. (*common M.*); perennial, keel crested, flowers in a terminal raceme, wings of the calyx ovate or oblong about as long as the corolla, capsule glabrous sessile, stems herbaceous often branched at the base, branches simple procumbent or ascending, leaves on the branches linear or oblong. *E. B.* t. 76. *P. amara* Don in *E. B. S.* t. 2764. *P. calcarea* Schultz. *P. oxyptera* Reich.: *E. B. S.* t. 2827. *P. depressa* Wend.

Dry hilly pastures, frequent. 4. 5—9. — *Stems* often very short, with crowded alternate or opposite, obovate or oblong, obtuse leaves, branched or simple: *branches* 4—8 inches long, being a mere continuation of the stem when this is simple, often springing from the root. *Cor.* beautifully crested, blue, purple, pink, or white. *Sepals* persistent, the two longer ones enclosing the fruit and usually twice as long, 3-nerved, the veins arising from the two lateral nerves either anastomosing with each other or with the upper vein of the central nerve. Our specimens of *P. amara* Don, gathered by the late Mr. Christy at Cuxton, and by Mr. Ward, also in Kent, we can by no means separate from *P. vulgaris*, having merely the stems, properly so called, more evident, accompanied with the usual broader and blunter leaves of the stem; very few show the veins of the lateral nerves of the sepals distinct from those of the central one. The *P. amara* of most continental botanists has in general much smaller flowers, lowest stem-leaves much larger, and the veins of the nerves of the sepals fewer and scarcely if at all anastomosing.

## ORD. XII. FRANKENIACEÆ *St. Hil.*

*Sepals* 4—5, combined into a furrowed persistent tube. *Petals* 4—5, clawed, crowned at the mouth. *Stamens* as many as the petals and alternating with them, with usually 1—2 accessory ones opposite to the petals. *Ovary* 1. *Style* filiform, 2—3-cleft. *Capsule* 2—4-valved, 1-celled. *Seeds* minute, attached to the margins of the valves. *Embryo* straight in the albumen. — Herbaceous or suffruticose, much branched. Leaves opposite, without stipules, but with a membranous sheathing base.

### 1. FRANKÉNIA Linn. Sea-Heath.

*Stig.* 3. — Named from *John Franken*, a Swedish botanist and professor of medicine at Upsal, who died in 1661.

1. *F. lævis* L. (*smooth S.*); leaves linear revolute at the margin glabrous ciliated at the base. *E. B.* t. 205.

Muddy salt-marshes, about Yarmouth and the other eastern coasts of England. Isle of Sheppey, Kent. 4. 7, 8. — A humble procumbent plant, with wiry stems and numerous fasciated leaves, which are really oblong, and only appear linear by the edges being revolute. *Flowers* pale rose-coloured, terminal or from the axils of the branches.

2. *F. \*pulverulenta* L. (*powdery S.*); leaves obovate retuse

glabrous above, downy and pulverulent beneath, petiole ciliated.  
*E. B. t. 2222.*

Found in the time of Dillenius and Hudson on the sea-coast of Sussex. ☉. 7. — *Stems* prostrate, repeatedly dichotomous. *Flowers* smaller than in the preceding.

### ORD. XIII. ELATINACEÆ *Camb.*

*Calyx* 3—5-partite or -cleft. *Petals* 3—5, sessile. *Stamens* equal to, or double the number of, petals. *Ovary* with from 3—5 cells, and as many *styles* and capitate *stigmas*. *Capsule* 3—5-celled, 3—5-valved; *valves* alternate with the dissepiments which adhere to a central axis. *Seeds* numerous, without *albumen*; *radicle* turned to the *hilum*. — *Small* annuals, inhabiting *marshy places*, with *rooting stems* and *opposite verticillate leaves*.

#### 1. ELATINE *Linn.* Water-wort.

*Cal.* inferior, 3—4-partite or -cleft, persistent. *Pet.* 3—4. *Styles* 3 or 4, very short. *Caps.* 3—4-valved, 3—4-celled. *Seeds* cylindrical, furrowed and transversely striated. — Named from *ελατιν*, some plant found growing among corn and very dissimilar to our present one.

1. *E. hexandra* DC. (*hexandrous W.*); leaves opposite spatulate, flowers alternate pedicellate erect hexandrous tripetalous, calyx-segments spreading, capsule turbinate concave at the summit 3-celled, seeds 8—12 in each cell nearly straight ascending. *E. tripetala Sm. E. Fl.* *E. Hydropiper E. B. t. 955.* (not L.)

Margins of ponds and ditches, rare. Bomere pool, near Conover, Shropshire; Hedge-Court Pond, near East Grinstead, Surrey; Binfield, Berks; Crawley and Maresfield, Sussex; Coleshill pool, Warwickshire; also in Cornwall, Leicestershire, Cheshire, and Anglesea. Loch Ruisky, near Callender, Perthshire; Loch of Drum, Kincardineshire; Loch Fadd, Isle of Bute. ☉. 7—9. — A minute, procumbent, much branching plant, with axillary solitary flowers. *Petals* rose-coloured. *Seeds* mostly beautifully ribbed and transversely striated.

2. *E. Hydropiper* L. (*small octandrous W.*); leaves opposite spatulate, flowers alternate sessile erect octandrous tetrapetalous, calyx shorter than the petals divided to the base, segments ligulate, capsule roundish depressed 4-celled, seeds about 4 in each cell pendulous uncinat. *Linn. Flor. Suec.; Borr. in E. B. S. t. 2670* (excl. a.). *E. nodosa Arn.*

Rare; Farnham, Surrey. East end of Llyn Coron, Anglesea, growing with *E. hexandra*. Newry and at the Lough Neagh outlet of the Lagan Canal, Ireland. ☉. 8. — Asserted by Seubert to be the

*Hydropiper* of Buxbaum and consequently of Linnæus, but certainly most distinct from *E. Hydropiper* DC., the *E. major* of Braun, which is that figured in Vaillant's Fl. Par. t. 2. f. 2., and Lam. ill. t. 320. f. 2. This last is much stouter, it has the seeds almost straight and as numerous as in *E. hexandra*, capsule depressed, twice as large as in our two species and the calyx cleft only to about the middle of the segments which are short very broadly ovate and erect; the flowers are evidently pedicellate: it is allied to, and united, we think erroneously, by Seubert, with *E. hexandra*. We have never seen specimens except from the neighbourhood of Paris.

#### ORD. XIV. CARYOPHYLLACEÆ Juss.

*Sepals* 5 or 4, persistent, distinct or united. *Petals* as many, rarely wanting. *Stamens* as many as or double the number of the petals, inserted upon a fleshy elevated disk, supporting the ovary, or a ring. *Anthems* opening longitudinally. *Ovary* 1. *Styles* 2—5. *Capsule* 1-celled (sometimes only so at the summit, and 2—5-celled below), 2—5-valved or opening at the summit with teeth, placenta central and free in the 1-celled capsules, in the rest axile. *Seeds* generally numerous. *Embryo* generally curved round a mealy *albumen*.—Herbs, more or less tumid at the joints, with opposite entire leaves, without stipules (by which alone our Suborder Alsineæ differs from Paronychiaceæ).

Sub-Ord. I. SILENEÆ. *Calyx monophyllous, toothed. Capsule stalked. Stamens* 10.

1. DIANTHUS. Calyx with bracts (usually 4) at the base. Seeds peltate. Styles 2.
2. SAPONARIA. Calyx naked at the base, terete. Seeds globose or reniform. Styles 2.
- 2<sup>a</sup>. VACCARIA. Calyx naked at the base, 5-angled and in fruit 5-winged. Styles 2.
- 2<sup>b</sup>. CUCUBALUS. Capsule fleshy, scarcely opening. Styles 3.
3. SILENE. Capsule dry, opening at the top with 6 teeth. Styles 3.
4. LYCHNIS. Styles 5. Petals with an appendage at the base of the limb.
5. AGROSTEMMA. Styles 6. Petals without an appendage.

Sub-Ord. II. ALSINEÆ. *Sepals distinct. Capsule sessile, 1-celled. Petals often perigynous.*

\* *Capsule opening by as many entire valves as styles.*

† *Styles as many as the sepals, and alternate with the valves of capsule, opposite the sepals.*

6. SAGINA. Petals 0, or minute, or entire. Stamens usually 4 or 10. Styles 4—5.

†† *Styles and capsule-valves fewer than the sepals; or if as many, styles opposite to, and caps.-valves alternate with, the sepals.*

7. BUFFONIA. Sepals 4. Stamens 4. Styles 2.

8. *CHERLERIA*. Sepals 5. Petals 0 (or very minute and perigynous). Stamens 10. Styles 3. Seeds few, minute. Flowers polygamous.
9. *HONCKENYA*. Sepals 5. Petals conspicuous. Stamens 10. Styles 3—5. Seeds few, large. Flowers polygamous.
10. *ARENARIA*. § 1. Sepals usually 5. Petals conspicuous. Stamens usually 10. Styles usually 3. Seeds many, minute. Flowers all perfect.

\*\* *Capsule opening by as many valves as styles, each bifid; or by twice as many valves or teeth as styles.*

† *Capsule opening to the middle by valves.*

10. *ARENARIA*. § 2. Sepals usually 5. Petals entire. Stamens usually 10. Styles about 3, opposite to the sepals when as many.
11. *MALACHIUM*. Sepals 5. Petals bifid. Stamens 10. Styles alternate with the sepals. Caps.-valves 5, opposite to the sepals, bifid at the apex.
12. *STELLARIA*. Sepals 5. Petals bifid. Stamens 10. Styles usually 3, opposite to the sepals when as many. Caps.-valves twice as many as styles.

†† *Capsule opening at the extremity by twice as many teeth as styles.*

13. *HOLOSTEUM*. Sepals 5. Petals toothed. Stamens and styles usually 3.
14. *MENCHIA*. Sepals usually 4. Petals entire. Stamens and styles as many as the sepals.
15. *CERASTIUM*. Sepals 4—5. Petals bifid. Stamens 4—10. Styles as many as the sepals.

SUB-ORD. I. SILENEÆ. *Sepals united into a monophyllous calyx. Petals and Stamens hypogynous, inserted on the summit of a more or less conspicuous stalk to the Ovary.*

### 1. *DIÁNTHUS* Linn. Pink.

*Cal.* monophyllous, tubular, 5-toothed, with about 4 imbricated opposite *scales* or *bracteoles* at the base. *Pet.* 5, clawed. *Stam.* 10. *Styles* 2. *Caps.* cylindrical, 1-celled. *Seeds* peltate. — Name derived from *Zeus, Dios, Jupiter*, and *antos*, a *flower*: dedicated, as it were, to Deity itself, to express the high value that was set upon this charming genus of plants.

\* *Flowers clustered.*

1. *D. Arméria* L. (*Deptford P.*); flowers clustered fascicled, scales of the calyx lanceolate subulate herbaceous downy as long as the tube. *E. B.* t. 317.

Pastures and hedges; not uncommon in England. In Angushire, but probably introduced. ☉. 7, 8. — *Stem* 1—1½ ft. high, branched upwards, downy. *Leaves* linear, opposite and connate, slightly pubescent, upper ones acute. *Limb* of the *petals* rose-coloured, with white (not red, as mentioned in *E. B.*) dots, crenate at the margin. *Flowers* scentless.

2. *D. prólifer* L. (*proliferous P.*); flowers clustered capitate, scales of the calyx ovate membranous about the length of the tube, outer ones acute inner ones blunt, leaves rough at the edge. *E. B. t.* 956.

Gravelly pastures in England, rare; Dover; Selsey island, Sussex; near Hampton-court; near Norwich; Hanby Castle, Worcestershire; Ryde, Isle of Wight; Hayling and Portsea islands, Hants; Jersey. ☉. 6—10.—Readily distinguished by its small, deep-coloured flowers, of which only one in a head expands at a time, and by the large, dry, brown, and membranous scales which envelope the calyces of several flowers. Limb of the petals obcordate, notched.

\*\* *Flowers solitary, one or more on the same stem.*

3. *D. \* Caryophýllus* L. (*Clove P., Carnation, or Clove Gilly-flower*); stem branched, flowers mostly solitary, scales of the calyx obovate submucronate much shorter than the tube, petals broad dentato-crenate glabrous, leaves linear subulate grooved glaucous smooth on the margin. *E. B. t.* 214.

On ruined walls in Kent, as on the castles of Deal, Sandown, Rochester, &c. 4. 7.—Few persons, seeing this plant as it grows on old walls; would suppose it was the origin of one of the “fairest flowers o’ the season,”

“The curious choice Clove *July-flower*,”

or *Carnation* of our gardens, with its endless diversity of colour and form; yet such it is always considered to be.

(*Mr. Leighton, Shropsh. Fl.* p. 188.) gives the *D. plumarius* or common Pheasant’s-eye Pink, as an inhabitant of old walls at Ludlow and Lufford, and Haughmond Abbey; and perhaps several of the stations usually assigned to *D. Caryophyllus* belong to it: it differs chiefly by the leaves rough on the margin, and the petals bearded and more deeply cut. It is the *D. plumarius* DC., but not of Linnæus according to Sir J. E. Smith, who does not distinguish it from *D. Caryophyllus*: the hairy variety of *D. Caryophyllus* found in Kent by Doody and the Rev. G. E. Smith belongs to it, but there are numerous hybrids or varieties between them. Neither has any pretensions to be accounted native; and we only admit the type of *D. Caryophyllus* because it has been (in name at least) considered a doubtful native for more than 150 years.

4. *D. deltoides* L. (*Maiden P.*); flowers solitary, scales of the calyx ovate-acuminate about half the length of the tube, leaves somewhat rough and downy lower ones obtuse, petals crenate glabrous.— $\alpha$ . scales of the calyx about 2. *E. B. t.* 61.— $\beta$ . scales of the calyx mostly 4, petals nearly white. *D. glaucus* L.

Borders of fields, banks and hedges, on a gravelly or sandy soil, in England and Scotland, extending as far north as Ross-shire. About Edinburgh, &c., where, in the King’s Park, grows the var.  $\beta$ . 4. 6—9.—A small plant, much branched even from its very base.

*Petals* very beautiful, rose-coloured, spotted with white, with a white eye enclosed in a deep purple ring. *Stem* pubescent, scabrous.

5. *D. cæsius* Sm. (*Cheddar P.*); stems mostly single-flowered, scales of the calyx roundish slightly pointed about four times shorter than the tube, leaves scabrous at the margin, petals unequally jagged bearded. *E. B.* t. 62.

On limestone rocks at Cheddar, Somersetshire. 4. 6, 7. — This exceedingly rare plant has very glaucous *foliage*, and comparatively large fragrant *flowers*, of a delicate rose-colour.

## 2. SAPONÁRIA Linn. Soapwort.

*Cal.* monophyllous, cylindrical, 5-toothed, without *bracteas* at the base. *Pet.* 5, clawed. *Stam.* 10, alternate ones opposite the petals but not adhering to their claws. *Styles* 2. *Caps.* oblong 1-celled, or 2-celled at the base, 4-toothed. *Seeds* globose or reniform. — Named from *sapo*, *soap*; the plant yielding a mucilaginous juice, which has been employed in place of that useful article.

1. *S. officinális* L. (*common S.*); leaves ovato-lanceolate, calyx cylindrical glabrous, capsule 2-celled at the base. *E. B.* t. 1060.

Road-sides, margins of woods, and hedge-banks, especially near cottages. 4. 7, 8. — *Stem* 1—1½ ft. high, rather stout, cylindrical. *Leaves* ribbed, opposite and connate. *Panicle* of numerous large rose-coloured *flowers*. *Limb* of the *corolla* obcordate.

(*Vaccaria vulgaris*, Host, has been found in corn-fields, but doubtless introduced; and *Cucubalus baccifer* L., given by Ray as a native of Anglesea, and therefore published in *E. B.* t. 1577, but since discarded, has, it is said, been found in the Isle of Dogs, by Mr. Luxford; but there is no reason for considering it indigenous.)

## 3. SILÉNE Linn. Catchfly.

*Cal.* monophyllous, tubular, often ventricose, 5-toothed. *Pet.* 5, clawed, mostly crowned at the mouth, and the *limb* generally notched or bifid. *Stam* 10, alternate ones opposite to the petals and adhering to the claws. *Styles* 3. *Caps.* 3-celled to the middle or only at the base (rarely 1-celled), 6-toothed, many-seeded. — Name supposed to arise from *σάλον*, *saliva*, in allusion to the viscid moisture on the stalks of many species; whence, too, the English name *Catchfly*.

\* *Capsule* 3-celled at the base or to the middle.

1. *Stems* tufted, short. *Peduncles* single-flowered.

1. *S. acúlis* L. (*Moss Campion*); caespitose, leaves linear ciliated at the base, peduncles solitary single-flowered, petals crowned slightly notched. *E. B.* t. 1081.



Rocky places on Snowdon. On the Helvellyn side of Grisedale Tarn, Cumberland. Abundant on all the Scottish mountains. 4. 6—8. — *Stems* short, 2—3 inches high, much branched and tufted. *Leaves* patent. *Flowers* a beautiful purple, and apparently diœcious. — One of the greatest ornaments of our alps, not unfrequently found with white *flowers*.

2. *Stems elongated. Flowers solitary or panicled. Calyx inflated, bladdery.*

2. *S. inflata* Sm. (*Bladder Campion*); flowers numerous panicled, petals deeply cloven with narrow segments scarcely crowned, calyx inflated reticulated, stem erect, leaves ovato-lanceolate. — *α*. stem and leaves glabrous. *Cucubalus* Behen *E. B. t.* 164. — *β*. stem and leaves downy.

Pastures and road-sides common. — *β*. near Cromer, Norfolk. Banks of the Clyde. 4. 6—8. — Whole plant glaucous or downy, variable in the size and shape of its *leaves*, and in the more or less numerous *flowers*. *Petals* pure white.

3. *S. maritima* With. (*Sea Campion* or *C.*); panicles few-flowered, petals with a shallow cleft and broad segments crowned, calyx inflated reticulated, stems spreading, leaves ovato-lanceolate or spatulate. *E. B. t.* 957.

Frequent upon the sea-shore in sandy and stony places, as well as by alpine rills. 4. 6—8. — This, although it has smaller *stems* and *leaves* than the last, has larger *flowers*; yet we will not assert we have done right in again raising it to the rank of a species. In this and the preceding, the *styles* are variable in number.

3. *Stems elongated. Flowers in racemes, and whorled.*

4. *S. Otites* Sm. (*Spanish C.*); stems erect nearly simple with few leaves, flowers in whorls subdiœcious, petals linear entire not crowned, leaves spatulate. *Cucubalus*, *E. B. t.* 85.

Sandy fields, chiefly in Norfolk, Suffolk, and Cambridgeshire. 4. 6—8. — Remarkable for its small unassuming, diœcious *flowers*, with their linear entire yellowish *petals*.

4. *Stems elongated, branched. Flowers in leafy racemes, alternate.*

5. *S. A'nglica* L. (*English C.*); hairy and viscid, petals (small) crowned slightly bifid or obovate entire, calyces with setaceous teeth ovate in fruit. — *α*. flowers white or tinged with red, petals usually bifid. *E. B. t.* 1178. — *β*. flowers white with a red spot on each obovate usually entire petal. *S. quinquevulnera* L.: *E. B. t.* 86.

Sandy and gravelly fields; *α*. in Surrey, Cambridgeshire, Hertfordshire, Devonshire, Norfolk, Lancashire, North Wales, Essex, Cornwall, and Isle of Wight. In most of the counties on the east coast of Scotland, and in Ayrshire, but certainly introduced. *β*. near

Wrotham, Kent, and Duppa's Hill, by Croydon, Surrey. ☉. 6—11. — More or less viscid. *Leaves* lanceolate, the lower ones spatulate. *Flowers* solitary from the axils of the upper leaves. *Calyx* at first cylindrical, scarcely shorter than the *petals*, erect; at length the *lower* ones, when in fruit, have their pedicels often singularly reflected. Our *var. β* is a common annual in gardens: it derives its Latin specific name from the 5 deep red spots sometimes observable on its *petals*, resembling marks of blood, but which are often more or less faint.

5. *Stems panicled, leafy. Calyx not bladdery,*

6. *S. nutans* L. (*Nottingham C.*); pubescent, flowers panicled secund cernuous, branches opposite, calyx cylindrical ventricose the teeth acute, petals deeply cloven crowned their segments linear, leaves (of the stem) lanceolate. *E. B. t.* 465. *S. paradoxa* Sm. *Fl. Br.* (not L.)

Limestone rocks, and chalky cliffs in England. Dover Cliff; about Nottingham; Ormeshead, Caernarvonshire; Isle of Wight, and Brown down, near Gosport, Hampshire; Knaresborough, Yorkshire; Dove Dale, Derbyshire. N. Queensferry; St. Cyrus, Kincardineshire; and near Arbroath, Scotland. 4. 5—7. — *Stem* 1—1½ ft. high. *Root-leaves* spatulate, acute. *Petals* rather large, white, expanding in the evening. *Teeth* of the capsule reflexed.

7. *S. \* Italica* DC. (*Italian C.*); pubescent, flowers panicled nearly erect, branches opposite, calyx long clavate the teeth blunt, petals deeply bifid not crowned the segments broad, radical leaves spatulate on long stalks, cauline ones sessile linear-lanceolate. *S. patens* W. *Peete* in *E. B. S. t.* 2748.

Dover Cliffs; *Mr. W. Peete*. Dartford, Kent; *Mr. A. Peete*. 4. 6, 7. — This may be at once known from *S. nutans* by the much longer and more clavate calyx, the absence of a crown to its petals, and their broader segments. The *petals* are white. The whole plant is more or less downy, the *panicles* slightly viscid. *Teeth* of the capsule reflexed. It has, we fear, escaped from gardens.

8. *S. cónica* L. (*striated Corn C.*); panicle forked, petals bifid crowned, leaves linear downy, calyx in fruit conical with numerous furrows, the teeth long subulate. *E. B. t.* 922.

At New Romney and Sandown Castle, Kent. Near Bury and Thetford, Suffolk. Dirleton, Haddingtonshire. ☉. 5—7. — *Petals* purple, small. *Calyx* of the flower almost tubular and imbricated at the base, of the fruit so broad and swollen at its base as to be nearly conical; it is moreover finely striated.

(*S. alpestris*, which has also the capsule perfectly 1-celled, was said by the late Mr. Geo. Don to have been discovered by him on a rock on a mountain to the east of Clova in Angusshire; and specimens from him are preserved in Mr. Borrer's and Dr. Walker Arnott's herbaria; but they appear certainly to have been obtained from a

garden. If discovered, it may be recognised by the calyx-teeth ovate blunt, limb of the petals broad and 4-cleft, and the seeds ciliated.)

6. *Stems elongated. Flowers corymbose. Calyx clavate.*

9. *S. \* Arméria* L. (*common* or *Lobel's C.*); panicles forked corymbose with crowned flowers, petals notched and crowned with awl-shaped scales, calyx clavate and as well as the leaves glabrous, leaves ovato-lanceolate, stem viscid. *E. B. t.* 1398.

Banks of the Dee, half a mile from Chester; now extinct. Yalding, Kent. ☉. 7, 8. — Extremely common in gardens.

\*\* *Capsule 1-celled from the very base.*

10. *S. noctiflora* L. (*Night-flowering C.*); panicle forked or flowers terminal, petals bifid crowned, calyx with long subulate teeth oblong in fruit with 10 connected hairy ribs, leaves lanceolate lower ones spatulate, capsule ovate. *E. B. t.* 291.

Corn-fields in a sandy or gravelly soil, in several counties of England. Coast of Forfarshire; Dirleton, Haddingtonshire; N. Queensferry; Scotland. ☉. 7, 8. — *Stem* 1 ft. or more high. *Leaves* much like the last, pubescent. Upper part of the *stem* many times dichotomous, each branchlet terminated with a single flower, and a solitary flower in the axil of the fork. *Flowers* rather large, sweet-scented, pale-reddish, almost white. *Peduncles* viscid.

#### 4. LÝCHNIS Linn. *Campion* *Lychnis*.

*Cal.* monophyllous, tubular, 5-toothed. *Pet.* 5, clawed, crowned at the mouth, mostly divided at the border. *Stam.* 10, alternate ones opposite the petals and adhering to their claws. *Styles* usually 5. *Capsule* opening by 5 or 10 teeth. — Named from *λυχνος*, a *lamp*; the thick cottony substance on the leaves of some species, or some similar plant, having been employed as wicks to lamps.

\* *Ovary 1-celled. Capsule 5-toothed. Eulychnis.*

1. *L. Flos-Cuculi* L. (*Meadow L.* or *Ragged Robin*); flowers loosely paniced, petals 4-cleft. *E. B. t.* 573.

Moist meadows and pastures, frequent. *fl.* 5, 6. — *Stem* 1—2 ft. high, hairy below, reddish-green, clammy above. *Leaves* lanceolate. *Calyx* and *flower-stalks* reddish-purple. *Petals* rose-coloured. In all this section the appendage at the base of the limb of the petals is membranous and soft.

\*\* *Ovary 5-celled at the base. Capsule 5-toothed. Viscaria.*

2. *L. Viscária* L. (*red German Catchfly*); petals slightly notched at the extremity, stem clammy at the joints. *E. B. t.* 788.

Dry alpine rocks; on Craig Breiddin, Montgomeryshire; about

Edinburgh and Newburgh; near Airly Castle; Glen Farg, and Den of Balthayock, Perthshire. *Æ.* 6. — *Stems* 1 ft. high, glabrous. *Leaves* lanceolate, acuminate. *Flowers* in a compact *panicle*, large, rose-coloured. *Capsule* distinctly stalked.

3. *L. alpina* L. (*red alpine Catchfly*); glabrous, petals bifid, flowers corymbose-capitate. *E. B. t.* 2254.

On the summit of Little Kilrannoch, between Glen Prosen and Glen Callater, at an elevation of about 3200 ft. Hobcaster Fell, Cumberland. *Æ.* 6, 7. — *Stem* 5—6 inches high, by no means viscid. *Leaves* lanceolate. *Flowers* rather small, rose-coloured. As to the Clova station, we have strong reasons for thinking that the plant was sown there, about 60 years ago. The Cumberland habitat is perhaps as doubtful.

\*\*\* *Ovary* 1-celled. *Capsule* 10-toothed. *Melandrium*.

4. *L. vespertina* Sibth. (*white C.*); flowers subdioecious, calyx of the pistilliferous flowers with linear-lanceolate elongated teeth, capsule conical, the teeth erect. *L. dioica* *β.* L.: *E. B. t.* 1580.

Under hedges and in grass-fields, common. ♂ or *Æ.* (?) 6—9. — *Petals* usually pure white and fragrant in the evening, sometimes, but rarely, reddish. In this and the following the *stem* is 1—2 ft. high, paniced above, pubescent, viscid in a slight degree about the joints. *Leaves* ovate, or ovate-lanceolate. *Calyx* in the anther-bearing flowers sub-cylindrical, in the fruit-bearing ones ovate.

5. *L. diurna* Sibth. (*red C.*); flowers subdioecious, calyx of the pistilliferous flowers with triangular teeth, capsule nearly globose, the teeth recurved. *L. dioica* *α.* L.: *E. B. t.* 1579.

Damp hedge-banks or in woods, not uncommon. *Æ.* 6, 7. — *Petals* red, very rarely nearly white. In both this and the last the *flowers* have occasionally both stamens and pistils, but we have seen none such in which one or other were not abortive.

## 5. AGROSTÉMMA Linn. Cockle.

*Cal.* monophyllous, tubular, coriaceous, with 5 teeth. *Pet.* 5, clawed, their border undivided and without a crown. *Stam.* 10, alternate ones opposite to the petals and adhering to their claws. *Styles* 5. *Caps.* opening with 5 teeth, 1-celled. — Name: *αγρου στεμμα*, *Crown of the field*, from its being a great ornament to corn-fields.

1. *A. Githago* L. (*Corn C.*). *E. B. t.* 741. *Lychnis* Lam. *Githago segetum* Desf.

Corn-fields, now too frequent, but probably an introduced plant. *Æ.* 6—8. — *Stem* 1—2 ft. high, branched erect. *Leaves* linear-lanceolate. *Calyx* ribbed, its segments much longer than the corolla. *Flowers* large, purple. As now limited this is the only species; all the others of Linnæus having been referred to *Lychnis*, and among them the

*Flos Jovis*, to which the name *Agrostemina* principally referred; it may be therefore preferable to adopt as the generic name the older one of *Githago*, a plant with similar seeds being called by Pliny *Gith*, from a Celtic word; and in modern Gaelic *Cath* means a seed of corn.

SUB-ORD. II. ALSINÆÆ. *Sepals distinct or nearly so. Petals and stamens inserted on an hypogynous or perigynous ring. Capsule sessile, 1-celled.*

### 6. *SAGINA* Linn. Pearl-wort.

*Cal.* of 4—5 sepals. *Pet.* 4—5, entire or emarginate, sometimes wanting. *Stam.* 4—10. *Styles* as many as the sepals, and alternate with them. *Valves of Capsule* entire, as many as the sepals and opposite to them. *Seeds* small, numerous.—The name (signifying *meat which fattens*) is little applicable to any of the minute plants belonging to this genus.

\* *Sepals, stamens and styles 4, rarely 5. Eusagina.*

1. *S. procumbens* L. (*procumbent P.*); perennial usually glabrous, stems procumbent, leaves mucronate, sepals 4 or rarely 5, much longer than the petals spreading in fruit, styles reflexed during flowering. *E. B.* t. 880.

Waste places, and dry pastures, everywhere, and at all elevations. 4. 5—9. — The central stem is very short, erect, and without flowers, lateral ones spreading, 2—4 inches long, and often sending out roots from different parts at the insertion of the leaves, and these throwing up new plants. In some situations it grows amongst *S. subulata*, and in others amongst *S. saxatilis*, from both of which it is with difficulty distinguished. *Leaves* linear-subulate, connate, with membranous margins at the base, tipped with a short pellucid point or mucro. *Peduncles* solitary, axillary and terminal, about an inch long, recurved at the apex after flowering, but erect when in fruit. "A pubescent var. occurs in Sussex." *Mr. Borrer.*

2. *S. apétula* L. (*annual small-flowered P.*); annual, stems slightly hairy erect or ascending, leaves aristate fringed, sepals 4, much longer than the calyx, very spreading in fruit obtuse, or the two outer ones slightly mucronate. *E. B.* t. 881.

Dry gravelly places, on walls, &c., frequent; sometimes upon the sea-shore. Rare in Scotland. ☉. 5—9. — More slender than the last, smaller and annual. *Leaves* narrower, more bristle-pointed, more glaucous and slightly hairy at the margins, sometimes glabrous. *Petals* always present, obcordate, or wedge-shaped and truncated.

3. *S. ciliáta* Fries (*ciliated P.*); annual, stem erect or ascending, leaves aristate glabrous or fringed, "petals none," sepals of the fruit erect or close-pressed to the capsule, 2 outer ones mucronate or aristate. *Bab. in Bot. Gazette*, i. p. 176.

Dry gravelly places and walls, probably frequent in England.

Near Edinburgh; under the stone table on the summit of Kinnoul Hill, and by the road-side to Dundee, near Perth. ☉. 5—9. — We introduce this species with much hesitation as distinct from *S. apetala*, the only certain difference consisting in the direction of the sepals when in fruit. The plant is stated to be nearly glabrous; but our Scotch specimens (and we have seen only the present one from Scotland) are quite as hairy as the *S. apetala*; the outer sepals are usually more decidedly mucronate, or even aristate; but as the leaves are also rather more aristate, such a structure of sepals is a natural consequence. There are said to be no *petals* in this and the next; still, as the normal state of the genus is to possess petals, forms of all the legitimate species must occasionally occur with them. Mr. Babington mentions that the apices of the peduncles are recurved after flowering and erect in fruit, while they are decidedly always erect in *S. apetala*: our dried specimens do not permit us to confirm this: in both the sepals are considerably narrower, and as well as the fruit much smaller than in the next species.

4. *S. maritima* Don (*Sea P.*); annual glabrous, stems erect or procumbent only at the base, leaves fleshy obtuse or with a short apiculus, "petals none," sepals 4 roundish-ovate about as long as the capsule erect in fruit. *E. B.* t. 2195.

Sea-coast, not unfrequent, chiefly in places occasionally overflowed. ☉. 5—9. — Quite glabrous. *Calyx* blunt, longer, or sometimes shorter than the *capsule*, sepals erect and close-pressed to the fruit. *Leaves* "rounded at the back;" Mr. W. Wilson. This species appears distinct and well-marked, it has a reddish or purplish tinge, especially on the *stems* and *leaves*; but we are sometimes inclined to doubt if the difference between it and the two preceding may not arise from the place of growth, and if so, they might be judiciously combined. It is not usually thought a French plant; but we have specimens collected at the mouth of the Lez, near Montpellier, where we believe it is considered a *var.* of *S. apetala*.

\*\* *Stamens* 10. *Sepals, petals and styles* 5. *Spergella*.

5. *S. saxatilis* Wimm. (*alpine P.*); glabrous or nearly so, leaves subulate mucronate, peduncles solitary very long, petals shorter than the calyx, sepals in fruit erect and close-pressed to the capsule, capsule longer than the calyx often twice as long. *Spergula saginoides* L.: *E. B.* t. 2105.

Highland mountains, frequent. 4. 6—8. — *Stems* many from the root, procumbent below, 2 or 3 inches in length. *Leaves* numerous and rather long at the base, shorter and in remote pairs upon the stem. *Flower* drooping before and after expansion; *capsule* erect, the valves much more narrowed upwards than in *S. procumbens*. *Styles* erect during flowering. Sometimes confounded with *Arenaria rubella*, but that has the sepals conspicuously 3-nerved.

6. *S. subulata* Wimm. (*Awl-shaped P.*); leaves subulate sub-ciliated aristate, peduncles solitary very long and the calyx

glandular-hairy, petals and capsule somewhat longer than the calyx. *Spergula Sw.*: *E. B.* t. 1082. *Sagina procumbens* *ß. Linn.*

Dry, gravelly, and stony pastures, not uncommon. *¶.* 6—8. — This comes very near the last species, but is usually more glandular-hairy; it is not easy, however, at all times to discriminate between them. Mr. W. Wilson cannot distinguish the Anglesea *S. subulata* from the Ben Lawers *S. saxatilis*: the latter is perhaps but an alpine var. of the former, though the original species of Linn. Both have very much the habit of *S. procumbens*.

7. *S. nodosa* L. (*knotted P.*); leaves subulate opposite glabrous connate, the lower ones sheathing, upper ones bearing tufts of young leaves in the axils, petals much longer than the calyx. *Spergula L.*: *E. B.* t. 694.

Wet, sandy, and marshy places, frequent. *¶.* 7, 8. — Central stem short, without flowers; lateral ones 3—4 inches high, branched, and decumbent at the base, where the leaves are  $\frac{2}{3}$  of an inch long, but they gradually become smaller upwards. *Flowers* large, white, 2—3 on the terminal branches, peduncled. Whole plant glabrous or sometimes glandular-hairy. *Cal.* nerveless.

#### 7. BUFFONIA *Sauv.*: *Linn.* *Buffonia*.

*Cal.* of 4 sepals. *Cor.* of 4 entire petals. *Stam.* 4. *Styles* 2. *Caps.* flattened, 1-celled, 2-valved, 2-seeded. — Name given by Sauvages in honour of the celebrated *Buffon*.

1. *B. \*annua* DC. (*annual B.*); stem loosely paniced from the base, branches spreading short firm, striæ on the calyx straight parallel, capsules scarcely so long as the cal., leaves subulate spreading at the base. *B. tenuifolia Sm.*: *E. B.* t. 1313.

Said to have been found in Plukenet's and Dillenius' time, about Boston in Lincolnshire, and on Hounslow Heath. ☉. 6. — Linnaeus' *B. tenuifolia* is made up of several species; hence it is better to adopt the name given by De Candolle.

#### 8. CHERLÉRIA *Linn.* *Cyphel*.

*Flowers* polygamous. *Cal.* of 5 sepals united at the base and urceolate. *Pet.* none (or "5 perigynous, very minute, entire and obliquely notched"). *Stam.* 10, alternating with glands; *anthers* abortive in the fertile flowers. *Styles* 3. *Caps.* 1-celled, opening with 3 valves, abortive when the anthers are perfect. *Seeds* 5—6, minute. — Named in honour of *John Henry Cherler*, a friend and coadjutor of *John Bauhin*.

1. *C. sedoides* L. (*mossy C.*). *E. B.* t. 1212.

Summits of the Highland mountains, especially those of the Breadalbane range. *¶.* 6—8. — *Roots* exceedingly long, running deep into the earth, bearing, upwards, innumerable short forked *stems*,

and forming a dense mass which scarcely rises above the surface of the soil. *Leaves* crowded, linear-subulate, channelled above, slightly ciliated and glandular at the edge. *Flowers* solitary, imbedded among the dense mass of leaves, yellow-green. *Cal.* membranous at the edge. In the fertile flowers the *stamens* are three times shorter than the calyx; when perfect they are as long as the sepals. We ourselves have never seen any *petals*.

#### 9. HONCKENÝA Ehrh. Sea-Purslane.

*Flowers* polygamous. *Sepals* 5. *Petals* 5, conspicuous, undivided. *Stamens* 10, alternating with glands: *anthers* abortive in the fertile flowers: *ovary* with 3—5 *styles*, abortive when the anthers are perfect. *Caps.* opening with 3—4 entire valves, or with 5 alternate with the sepals. *Seeds* 8—10, large.—Named after Gerh. Aug. Honckeny, a German botanist.

1. *H. peploides* Ehrh. (*ovate-leaved S.*); sepals ovate obtuse with scarious margins, petals obovate, leaves ovate acute and stems very fleshy. *Arenaria* L.: *E. B. t.* 189. *Alsine* Wahl.

On sandy sea-shores, frequent. 4. 5—7.—*Root* long and creeping, slender. *Stems* decumbent at the base; *branches* erect, leafy upwards. *Leaves* large, decussate, connate, fleshy, shining, a little recurved. *Flowers* solitary or 2—3 together, in the axils of the upper leaves, nearly sessile, closing in the shade. *Calyx* ribless. *Petals* white, small, scarcely longer than the *calyx*, distant, broadly ovate, shortly clawed. Surrounding the *germen* are 10 *glands*, alternating with the *stamens*. "*Styles* 3 in the lower, mostly 5 in the upper flowers," Torr. and Gr. *Capsule* large, roundish, with few, large, and black seeds.

#### 10. ARENÁRIA Linn. Sandwort.

*Flowers* all perfect. *Sepals* 5. *Pet.* 5, conspicuous, undivided. *Stam.* 10, or occasionally 5. *Styles* 3—4. *Caps.* 1-celled, opening with 3—5 entire valves (alternating with the sepals when as many), or with 6—10 valves (or teeth). *Seeds* many, minute.—Named from *arena*, *sand*, the greater number of species growing in sandy soil.

§ 1. *Valves of capsule as many as the styles, entire.* *Alsine*.

1. *A. verna* L. (*vernal S.*); stems numerous panicled above, leaves subulate 3-nerved when dry, petals obovate and as well as the capsule somewhat longer than the lanceolate acuminate 3-nerved sepals. *E. B. t.* 512. *Alsine* Wahl.

Rocky and mountainous pastures, in the north of England, Wales, and Cornwall; abundant on Arthur's Seat and in other places about Edinburgh; Mael Duncroisg, Breadalbane: not found at all in the west of Scotland. 4. 5, 6.—*Stems* 3—4 inches high, slightly hairy, as are the *calyces* and *peduncles*. The *leaves* are usually acute or mu-



cronate, but in the Cornish form, supposed to be the obscure *A. Gerardi* Willd., they are bluntish; *lower ones* crowded, often curved.

2. *A. rubella* Hook. (*alpine S.*); stems numerous, peduncles terminal downy mostly single-flowered, leaves linear-subulate obtuse 3-nerved, petals elliptic-lanceolate and as well as the capsule shorter than the lanceolate very acute 3-nerved calyx. *E. B. S. t.* 2638. *Alsine Wahl.* *Arenaria quadrivalvis Br.*

Near the summits of the Breadalbane mountains, among soil and broken rocks, rare. Ben Hope, Sutherland. *¶.* 7, 8. — This is quite an alpine or arctic plant. It loves to grow with its *root* buried under a loose piece of rock, and late in the summer often acquires a reddish tinge. *Stamens* from a glandular disk. *Styles* usually 4, sometimes 3 or 5; the *valves* of the capsule are, consequently, equally variable.

3. *A. uliginosa* Schl. (*Bog S.*); stems prostrate at the base, then erect with 1—3 flowers on long slender peduncles, leaves subulate semiterete bluntish nerveless, sepals ovate acute 3-nerved about as long as the oblong-obovate petals. *E. B. S. t.* 2890. *Spergula stricta Sw.* (not *Mich.*) *Alsine Wahl.*

Banks of a stream near the top of Widdy-Bank Fell (not far from Langdon foot-bridge), Teesdale, Durham. *¶.* 6. — Whole plant glabrous. *Stems* caespitose. Nerves of the sepals disappearing near the middle, the margin membranaceous and almost white. The specific name *stricta* is the oldest, but this plant is very different from the *A. (Alsine) stricta Mich.*

4. *A. tenuifolia* L. (*fine-leaved S.*); stems much branched dichotomous paniced above, leaves narrow linear-subulate acute 3-nerved, sepals narrow lanceolate 3-nerved about twice as long as the oblong petals, capsule 3-valved as long as the calyx. *E. B. t.* 219. *Alsine Wahl.*

Sandy fields; Norfolk, Cambridgeshire, Oxfordshire, &c. Crammond Island, and near Petticur Harbour, Frith of Forth; Scotland (scarcely indigenous and not found of late years). *☉.* 5, 6. — *Stems* 4—6 inches high, glabrous, throughout remarkably slender, especially the *peduncles*. *Petals* varying a little in length, sometimes obovate. Don alone is said to have seen this in Scotland, but his published specimens are from England.

5. *A. fastigiata* Sm. (*level-topped S.*); stems erect straight, leaves fasciated subulato-setaceous erect, flowers fascicled, sepals much acuminate (white) with two central (green) ribs twice as long as the obovate petals. *E. B. t.* 1744. *Alsine Fenzl.*

On rocks in the mountains of Clova, Angusshire, and also in Fifeshire: *Mr. Don.* *☉.* 6. — Sir J. E. Smith rightly distinguishes this, the *A. fasciculata* of Jacq. and De Cand., from the very rare species so named by Gouan. The Clova specimens which we possess from Drummond as well as Don, are only distinguishable from the *A. mucronata* of DC., of which this is perhaps a variety, by the more compact inflorescence, annual (or biennial) root, and erect stem: it is also found in

Switzerland and the Pyrenees in warm rocky places, at no great elevation. It is very peculiar in habit, and quite unlike any other British species. *Seeds* "beautifully toothed like a wheel, each on a long slender stalk." *Sm.*

§ 2. *Valves of capsule twice as many as the styles.* *Euarenaia.*

6. *A. Norvégica* Gunn. (*Norwegian S.*); leaves spatulate-obovate fleshy glabrous, sepals half as long as the corolla ovate acute with 3—5 obscure ribs. *E. B. S. t.* 2852. *A. ciliata* β. *Willd.*

On Serpentine Hill, Unst, Shetland; *Mr. T. Edmonstone, Jun.* 4. 7, 8.—Whole plant perfectly glabrous. *Stems* much branched, procumbent; branchlets 1—3-flowered. This has altogether the mode of growth and general aspect of *A. ciliata*; but the *leaves* are succulent and without any ciliæ, and the *sepals* are broader and only obscurely ribbed.

7. *A. ciliata* L. (*fringed S.*); leaves spatulate roughish ciliated, sepals half as long as the corolla lanceolate acute with 3—5 prominent ribs. *E. B. t.* 1745.

Linestone cliffs, near Ben Bulbin, a mountain in Sligo, Ireland. 4. 6—8.—*Stems* much branched, procumbent or ascending, roughish, downy; branchlets 1—5-flowered. *Petals* ovate.

8. *A. serpyllifolia* L. (*Thyme-leaved S.*); leaves ovate acute subscabrous sessile, calyx hairy its outer sepals 5-ribbed about as long as the corolla. *E. B. t.* 923.

Walls and dry waste places, frequent. ☉. 6—8.—*Stems* 2—6 inches in length, erect or procumbent, much branched, pubescent. *Leaves* small, rather rigid. *Flowers* white, on short stalks, from the forkings of the upper part of the stem or the axils of the leaves. *Petals* as long as the *calyx*.—*Mr. W. Wilson* finds a *var.* at Bangor, with 5 stamens, and the petals only  $\frac{1}{4}$  as long as the calyx, which has prominent ribs.

9. *A. trinervis* L. (*three-nerved S.*); leaves ovate acute petiolate 3-(rarely 5-)nerved ciliated, flowers solitary, sepals rough on the keel with three obscure ribs, hilum of the seeds with an appendage. *E. B. t.* 1483. *Moehringia Clairv.*

Shady woods and moist places. ☉. 5, 6.—*Stems* 1 ft. high, much branched, pubescent. *Upper leaves* sessile. *Flower-stalks* an inch or more long, from the forkings of the extremities of the stem; in *fruit* spreading, the upper part deflexed. *Petals* oblong-ovate, white, scarcely longer than the acute segments of the *calyx*. Distinguished from all the other known species by the seeds; on which account it has been placed in *Moehringia*, along with *M. muscosa*,—a most unnatural conjunction.

# 11. MALÁCHIMUM *Fries.* Mouse ear Chickweed.

*Sep.* 5. *Pet.* 5, deeply cloven. *Stam.* 10. *Styles* 5, alternate

with the sepals. *Caps.* opening with 5 valves opposite to the sepals, each bifid at the apex, many-seeded.—Named from *μαλακος* *soft* or *feeble*, from the nature of the plant.

1. *M. aquaticum* Fr. (*Water M.*). *Cerastium* L.: *E. B.* t. 538.

Sides of rivers and ditches, throughout England, from the Isle of Wight to Yorkshire, but not common. 4. 7, 8. — *Stems* 1—2 ft. long, angular, dichotomously branched and straggling, viscid upwards. *Leaves* cordate-ovate, acuminate, with short scattered hairs on their surface and margin; upper ones sessile, lower ones only petiolate. *Flowers* solitary in the forks of the stem. *Capsule* longer than the calyx. “*Seeds* beautifully marked with close papillæ with stellate bases:” *Bromf.* Very similar to, and perhaps not generically distinct from *Stellaria nemorum*, which however differs by the fewer *styles*, the 6 equal *valves* to the capsule, and the *leaves* usually hairy only on the margin.

## 12. STELLÁRIA Linn. Stitchwort.

*Sep.* 5. *Pet.* 5, deeply cloven. *Stam.* 10. *Styles* 3. *Caps.* opening with 6 valves, many-seeded.—Named from *stella* a *star*; because the corolla spreads in a star-shaped manner.

1. *S. nemorum* L. (*Wood S.*); leaves petiolate cordate, upper ones ovate sessile, panicle dichotomous. *E. B.* t. 92.

In moist woods, principally in the north of England and Lowlands of Scotland. 4. 5, 6. — *Stems* weak, 1—1½ ft. long, often glabrous below, uniformly downy above, except on the peduncles, where the pubescence sometimes forms a line on one side. *Leaves* very large, usually glabrous, but rough with extremely minute elevated dots, occasionally ciliated at the margin, sometimes hairy on both sides. *Sepals* lanceolate, white at the edges. *Petals* narrow, deeply bifid, pure white, twice as long as the sepals. *Receptacle of seeds* linear, elongated: in all the other species it is very short.

2. *S. média* With. (*common Chickweed* or *S.*); leaves ovate lower ones petiolate upper ones sessile, stems with an alternate line of hairs on one side, petals 2-partite, stamens 5—10. *E. B.* t. 537. *Alsine* L.

Road-sides and waste places, abundant. ☉. *Fl.* almost the whole year.—*Stem* weak, with alternate lines of hairs between each pair of leaves, by which the species is readily distinguished. *Leaves* glabrous, the uppermost sessile; the others on foot-stalks which are fringed with hairs. *Flowers* small, white, on solitary, axillary and terminal stalks. A slender and apetalous *var.* occurs on the Sussex and Isle of Wight coasts, and about Weybridge, Surrey; its calyx is sometimes hairy, sometimes naked.—This species is a good pot-herb, and small birds are very fond of the seeds.

3. *S. holóstea* L. (*greater S.*); stem nearly erect with 4 rough sharp angles, leaves lanceolate much acuminate minutely

ciliated sessile, petals cloven to the middle twice as long as the nerveless calyx. *E. B. t.* 511.

Woods and hedges, frequent. *¶.* 4—6.—*Plants* 1—1½ ft. high, rather rigid and brittle, somewhat glaucous. *Flowers* large and with much broader petals than the two following, pure white. *Panicle* of few flowers, with leafy bracteas.

4. *S. glauca* With. (*glaucous Marsh S.*); quite smooth and glaucous, stem angled nearly erect, leaves linear-lanceolate entire, flowers upon long solitary axillary footstalks, petals bipartite much longer than the 3-nerved sepals. *E. B. t.* 825.

Marshy places, margins of lakes, &c. *¶.* 5—7.—*Stems* 1—1½ ft. high. *Bracts* with scarious margins. *Flowers* next in size to those of *S. holostea*. Readily known from that and *S. graminea* by its narrower, glaucous leaves, solitary, axillary flowers, and narrower sepals.

5. *S. graminea* L. (*lesser S.*); stem angled nearly erect smooth, leaves linear-lanceolate acute entire glabrous ciliated, panicle much branched, petals bipartite scarcely longer than the 3-nerved sepals. *E. B. t.* 803. — *β. scapigera*; stem short, panicle contracted, leaves pubescent at the margins. *S. scapigera Willd.*: *E. B. t.* 1269.

Dry pastures, fields and heaths, common. — *β.* “By the sides of rivulets in the mountains of Badenoch between Loch Eneachd and Loch Laggan.” *G. Don.* (In other words, between Dalwhinnie Inn and the Old Kirk of Laggan.) *¶.* 5—8. — *Stem* 1 ft. high, more slender than the two preceding, and readily distinguishable by its much smaller flowers, large and branching panicle, 3-nerved calyx; and entire leaves, which are, moreover, by no means so much acuminate. *Bracts* membranaceous, ciliated. *Anthers* red. The leaves have the hairs of the ciliæ in the common form, and of the pubescence in *β*, decurved. The station assigned by Don to our var. *β*, has been almost universally misquoted: this however is of little consequence, as we now believe that plant to exist nowhere in a wild state, but to be a mere cultivated form of *S. graminea*. Don cultivated it extensively in his garden at Forfar, from which we have specimens. It was originally described by Willdenow, from a plant in the Berlin gardens, who does not say from whom it was received; but it is not even conjectured to have been from Scotland, and has not been found any where else: it was soon introduced into our gardens, and treated as an alpine plant.

6. *S. uliginosa* Murr. (*Bog S.*); leaves ovato-lanceolate entire with a callous tip, flowers in dichotomous panicles, petals bipartite shorter than the sepals, which are combined at the base. *E. B. t.* 1074. *S. graminea β. L. Larbrea St. Hil.*

In ditches and rivulets, frequent. ☉. 5, 6. — This and the preceding species, besides having the sepals combined at the base, have truly perigynous petals. Its general habit is that of *Stellaria*, from all the

other species of which it is distinguished by the comparatively minute petals.

### 13. *HOLÓSTEUM* Linn. Jagged-Chickweed.

*Cal.* of 5 sepals. *Pet.* 5, jagged at the point. *Stamens* 3—5. *Styles* 3. *Caps.* subcylindrical, 1-celled, many-seeded, opening at the extremity with 6 teeth. — Named from ὅλος, *all*, and ὀστέον, *bone*, by antiphrasis, the texture being the very reverse, soft and delicate.

1. *H. umbellátum* L. (*umbelliferous J.*); leaves elliptical ovate acute, flowers umbellate, peduncle pubescent viscid, pedicels reflexed after flowering at length erect. *E. B. t.* 27.

Rare, on old walls about Norwich; Bury, Eye, and Yarmouth.

⊙. 4. — A singular and interesting plant, the original *Holosteum* of Linnaeus.

### 14. *MÆ'NCHIA* Ehrh. Mœnchia.

*Cal.* of 4 sepals. *Pet.* 4, entire. *Stam.* 4 or 8. *Styles* 4. *Caps.* of 1 cell, many-seeded, opening with 8 teeth at the extremity. — Name given in compliment to *Conrad Mœnch*, Professor of Botany at Hesse Cassel.

1. *M. erécta* Sm. (*upright M.*). *Sagina* L.: *E. B. t.* 609.

Pastures, in a gravelly soil. ⊙. 5, 6. — *Stem* 2—4 inches high, erect or frequently a little reclining at the base, glabrous as well as the leaves, which are opposite, linear-lanceolate, acute, rigid, glaucous. *Sepals* large, acuminate, white and membranous at the margin. *Pet.* lanceolate, as long as the calyx. *Caps.* as in *Cerastium*.

### 15. *CERÁSTIUM* Linn. Mouse-ear Chickweed.

*Cal.* of 5 sepals. *Pet.* 5, cloven. *Stam.* 10. *Styles* 5. *Caps.* bursting at the top with 10 equal teeth. — Named (κερας a *horn*) from the rather long and curved capsules of some species.

\* *Petals not longer than the calyx.*

1. *C. vulgátum* L. (*broad-leaved M.*); hairy nearly erect viscid above, leaves ovate, bracteas herbaceous, petals as long as the calyx about half the length of the curved capsule, flowers mostly subcapitate, calyces oblong longer than their pedicels. *E. B. t.* 789. *C. glomeratum* Thuil.

Fields, pastures, and road-sides, common. ⊙. 4—9. — *Stem* 6—10 inches high, branched below, dichotomous above. *Flowers* at first subcapitate, afterwards occasionally in dichotomous panicles. *Petals* narrow, bifid, sometimes wanting. *Caps.* cylindrical, curved upwards.

2. *C. viscósium* L. (*narrow-leaved M.*); leaves oblong-lan-

ceolate, stem hairy viscid spreading, lower bracteas herbaceous upper ones with narrow membranous margins, flowers at first almost fascicled afterwards in elongated dichotomous cymes, calyx about as long as the pedicel and the corolla, about half the length of the curved fruit. *E. B. t.* 790. *C. triviale Link.*

Pastures and waste places, wall-tops, &c. ♀? or rather ☉. *Fl.* Spring and Summer. — Much resembling the last, but a larger, coarser, and spreading plant, with longer and narrower leaves; calyces shorter than their footstalks in general, especially when in fruit. Judging from the figure, *C. pumilum*, Curtis Flora Lond., seems but the pentandrous or early-flowering state of this species.

3. *C. senidecándrum* L. (*little M.*); leaves ovate or oblong, stem hairy viscid suberect simple bearing a few-flowered cyme, upper half of all the bracts and the sepals membranous, calyx scarcely shorter than the pedicel about twice as long as the petals shorter than the fruit. *E. B. t.* 1630.

Dry waste places in sandy soil, on wall-tops, &c., frequent. ☉. 3—5. — This displays itself, as Sir J. E. Smith well observes, in early spring, on every wall, and withers away before the *C. viscosum* begins to put forth its far less conspicuous blossoms. Leaves usually hairy, sometimes glabrous. Stamens usually 5, often 4, occasionally 10. Fruit more or less curved, variable in length from a little longer than the calyx.

4. *C. tetrándrum* Curt. (*four-cleft M.*); leaves ovate or oblong, stem hairy and somewhat viscid dichotomous with flowers in the forks, the whole a leafy cyme, lower bracteas herbaceous some of the uppermost and the sepals with a narrow membranaceous margin, calyx rather longer than the petals  $1\frac{1}{2}$ —4 times shorter than the pedicels, fruit usually the length of the calyx rarely a little longer. *C. atrovirens Bab.* *C. pedunculatum Bab.* *Sagina cerastoides, E. B. t.* 166.

Waste ground, walls, and sandy places, especially near the sea. On the east coast of England (Yarmouth), the south (Sussex), and in Wales. About Edinburgh, banks of the Tweed, Lanark, Campsie, &c. Howth, Ireland. ☉. 5—7. — Stamens 4 or rarely 5, never, so far as we have seen, more numerous. Flowers usually 4-cleft. "Petals inversely heart-shaped, shorter than the taper-pointed calyx which is nearly as long as the capsule." *Sm.* — In comparing this and the preceding species, it may be proper to state that by the lowest bracteas we mean the pair of leaves at that fork where the first pedicel appears: in the three species already noticed the bracteas become suddenly smaller, whereas in *C. tetrándrum* they remain about as large as the leaves, and similar to them, after the cyme has been repeatedly forked. This species was originally discovered by the late Sir J. E. Smith on wall-tops about Edinburgh, and afterwards found there by Mr. Dickson, by whom seeds were carried to London, and specimens raised from which the drawings in both the English Botany and the

Flora Londinensis were taken; there can, therefore, be no doubt of these works having in view the same thing. Smith states the fruit-bearing pedicels to be reflexed, and in Dickson's specimens, perhaps cultivated, we have seen them in that state; so that it is probable this may be Mr. Babington's plant, which however he says is that of the Flora Lond. only, rejecting the other synonyms; it may possibly be the common form from wall-tops. Our Scotch specimens from the sea-shore have the stems often forked almost from the base, so that the whole might be called a leafy cyme, the pedicels rather shorter and always erect in fruit, and the capsule often shorter than, and rarely ever exceeding, the calyx: this we presume is Mr. Babington's *C. atrovirens*. But we possess what we think the true plant of Smith from Mr. W. Wilson, collected on the shore at Conway in Wales; and on the other hand, our specimens from wall-tops near Lanark and Campsie (in Scotland), pass into our sea-side forms. As a species we can therefore offer no characters to distinguish it, but the leafy bractes, short capsule and more pointed sepals.

\*\* *Petals longer than the calyx.*

5. *C. arvense* L. (*Field C.*); leaves linear-lanceolate, sepals somewhat acute, bractes membranaceous at the margins and apex, petals twice as long as the calyx. —  $\alpha$ . leaves pubescent especially at the base. *E. B. t.* 93. —  $\beta$ . *strictum*, stem and leaves glabrous.

Dry, sandy, and gravelly places; less frequent in Scotland. —  $\beta$ . Arran, Ireland.  $\mathcal{L}$ . 4—8. — *Stems* much branched and decumbent at the base, a span long, slender. *Flowers* large, pure white, 2 or 3 on terminal stalks. *Capsule* scarcely longer than the calyx.

6. *C. alpinum* L. (*hairy alpine C.*); subglabrous or clothed with long white soft silky hairs, stem ascending, leaves elliptical ovate or oblong, panicle dichotomous few-flowered, bractes herbaceous with usually a narrow membranaceous margin, capsule cylindrical-oblong slightly curved. *E. B. t.* 472. *C. latifolium*, *Lightf. Scot. i.* p. 242. *t.* 9.

Frequent on the Highland mountains of Scotland. Striden Edge, Helvellyn, England. Very rare in Wales, and not now to be found on Snowdon.  $\mathcal{L}$ . 6—8. — Much branched below and creeping, then erect, 3—5 inches high. *Leaves* sometimes lanceolate. *Flowers* large, handsome, white. *Petals* bifid at the point. "Seeds small, acutely tubercled." *H. Watson*. — The more glabrous form is the *C. alpinum* of the French botanists, while the silky one is the *C. tomentosum* Lam.

7. *C. latifolium* L. (*broad-leaved alpine C.*); subglabrous or clothed with short rigid yellowish pubescence, stems prostrate caespitose, leaves elliptical-ovate, branches mostly single-flowered, bractes herbaceous, capsule cylindrical oblong nearly straight. *E. B. t.* 473.

Mountains of Wales; Clogwyn y Garnedd, and Clogwyn du'r

arrdhu, Snowdon, but rare. Ben Lomond, Ben Nevis, Ben Ghlo, &c., in Scotland. *fl.* 5—8. — Never clothed with long white hairs, of a deeper green than *C. alpinum*, sometimes almost glabrous. The stems are dichotomous and bare of leaves below, and much buried under rocks and stones. Flowers solitary, rarely 2, terminal on the branches; when more than one the bracteas are generally oval and foliaceous. "Seeds large, rugose." *H. Watson*. A dwarf variety occurs in Unst, Shetland. We agree with Mr. W. Wilson in thinking that there exists scarcely any difference either in flower or fruit between this and the preceding. In both, the capsules are broadly oblong, shining, almost twice as long as the calyx, and nearly straight.

8. *C. trigynum* Fries (*Stitchwort C.*); stems decumbent with an alternate hairy line, leaves oblong-spathulate, peduncles 2 or 3 mostly terminal downy, styles mostly 5. *Stellaria ceras-toides* *L.*: *E. B.* t. 911.

Breadalbane mountains of Scotland, and mountains to the north of that great range. *fl.* 7, 8. — Stem 4—6 inches long, the lower part bare of leaves and much branched. Leaves glabrous or hairy, subsecund and subfalcate, as observed by Wahlenberg; their points callous. Flowers large, pure white. Sir J. E. Smith states that the styles are sometimes 4 or 5; and the capsules, in our specimens, have some 6 and some 10 teeth.

## ORD. XV. LINACEÆ *De Cand.*

*Sepals* 4—5, imbricated in æstivation, persistent. *Petals* 4—5, with a twisted æstivation, very fugacious. *Stamens* 4—5, united at the base into an hypogynous ring, with small teeth (abortive stamens) between them. *Ovary* with 3—5 cells, and as many styles. *Stigmas* capitate. *Capsule* globose, crowned with the permanent base of the styles, 3—5-celled; each cell partially divided into 2 by a spurious dissepiment, and opening with 2 valves at the apex. *Seeds* 1 in each spurious cell, inverted. *Embryo* straight, large, thin, with little or no albumen. — Mostly herbs, with entire leaves and without stipules. — *Linum catharticum* is a purgative: *L. usitatissimum* is the common Flax.

1. LINUM. Petals, stamens and styles 5.

2. RADIOLA. Petals, stamens and styles 4.

### 1. LINUM *Linn.* Flax.

*Sep.* 5, persistent. *Pet.* 5. *Stam.* 5. *Styles* 5. *Seeds* ovate, compressed. — Named from *Lin*, thread, in Celtic and also in modern Gaelic.



\* *Leaves scattered.*

1. *L. \*usitatissimum* L. (*common F.*); leaves alternate lanceolate, sepals ovate acute 3-nerved ciliated, petals crenate, stem subsolitary. *E. B. t.* 1357.

Corn-fields, not unfrequent. ☉. 7. — *Stem* 1—1½ ft. high, slender, corymbosely branched above. *Leaves* distant. *Flowers* large, purplish-blue. Valves of *capsule* glabrous. — This, as may be inferred from its name, yields in the strong fibres of the bark of the stem, the valuable flax of commerce; while from the seed a valuable oil is expressed, known by the name of *Lint-seed oil*. The seeds, too, are highly mucilaginous, and much employed in poultices, fomentations, &c.

2. *L. perénne* L. (*perennial blue F.*); leaves alternate linear acute, sepals obovate obtuse obscurely 5-ribbed glabrous, stems numerous from the same root, peduncles erect. *E. B. t.* 40.

Chalky hills: Cambridgeshire; Hinton, Northamptonshire; Westmoreland, Norfolk, and Suffolk. Near Monkstown, Ireland. 4. 6, 7.

3. *L. angustifolium* Huds. (*narrow-leaved pale F.*); leaves alternate linear-lanceolate acuminate 3-nerved, sepals elliptical three-ribbed mucronate, stems numerous from the same root. *E. B. t.* 381.

Sandy and chalky pastures, principally near the sea: Kent, Sussex, Norfolk, Suffolk, Isle of Wight, Cornwall. Near Liverpool, and Plymouth. About Dublin. 4. 5—9. — All the three British specimens of this division have a great similarity in their habit. The best characters, as observed by Sir J. E. Smith, are taken from the calyx. In the present the *petals* are of a paler blue than in the preceding species, and smaller in proportion to the size of the calyx. “*Stems* lax, very irregularly branched. Valves of *capsule* hairy.” — *Bromf.*

\*\* *Leaves opposite.*

4. *L. catharticum* L. (*purging F.*); leaves opposite oblong, stem dichotomous above, sepals elliptical acuminate 1-nerved. *E. B. t.* 382.

Pastures, everywhere abundant. ☉. 6—9. — *Stem* slender, upright, 2—6 inches high. *Leaves* varying from oblong to obovato-lanceolate. *Flowers* gracefully drooping before expansion, white, small. *Petals* oblong, sometimes acute, often obtuse.

2. *RADIOLA* Gmel. Flax-seed.

*Sep.* 4, united up to their middle, and mostly 3-cleft. *Pet. Stam.* and *styles* 4. — Named from *radius*, a ray; probably in consequence of the radiating nature of the branches.

1. *R. Millegrána* Sm. (*Thyme-leaved F.*). *E. B. t.* 893. *Linum Radiola* L.

Moist gravelly and boggy soils, in many places. ☉. 7, 8. — A very minute plant, 1—2 inches high, repeatedly dichotomous. *Leaves* distant, ovate, entire, glabrous, under a high power of the microscope appearing dotted. *Flowers* axillary and terminal, solitary, on short peduncles. *Cal.* segments united, so as to form a monophyllous many-toothed calyx.

# ORD. XVI. MALVACEÆ Juss.

*Calyx* 5-cleft, valvate in æstivation. *Corolla* of 5 *petals*, regular, twisted in æstivation. *Stamens* indefinite, monadelphous, often united with the petals at their bases. *Anthers* reniform, 1-celled. *Ovary* 1. *Styles* single or several combined. *Stigmas* several. *Fruit* a capsule, with many cells and valves; or composed of many carpels, which are dehiscent or indehiscent, collected into a compact body, or placed in a whorl round the base of the *style*. *Albumen* none, or fleshy, but not abundant. *Embryo* curved, with twisted and doubled *cotyledons*. — Herbs, or shrubs, or trees. *Leaves* *alternate*, with stipules. *Flowers* *axillary*. — They abound in mucilage, especially the seeds. The stems and roots afford an excellent fibre. *Gossypium* yields the *Cotton*.

1. LAVATERA. Involucre 3-lobed.
2. MALVA. Involucre 3-leaved.
3. ALTHEA. Involucre 6—9 cleft.

## 1. LAVATERA Linn. Tree-Mallow.

*Cal.* with a 3-lobed *involucre*. *Carpels* numerous, circularly arranged, 1-seeded. — Named in honour of the two *Lavaters*, friends of Tournefort.

1. *L. arborea* L. (*Sea T.*); stem arborescent, leaves with about 7 angles downy plaited, peduncles axillary aggregated single-flowered shorter than the petioles. *E. B. t.* 1841.

On maritime, always insulated, rocks, in the south and west of England. Islet off the coast of Anglesea. Isles in the Frith of Forth. Ireland. ♂. 7—9. — *Stem* 3—5 ft. high. *Flowers* large, purple rose-coloured, shining, darker at the base of the petals.

## 2. MÁLVA Linn. Mallow.

*Cal.* with a 3-leaved *involucre*. *Carpels* numerous, circularly arranged, 1-seeded. — Name altered from *μαλαχή*, *soft*, in allusion to the emollient nature of the species.

1. *M. sylvestris* L. (*common M.*); stem erect herbaceous, leaves with 5—7 rather acute deep lobes, peduncles and petioles hairy, fruit glabrous reticulately wrinkled. *E. B. t.* 671.

Waste places and way-sides; not common in Scotland. ♀. 6—9. — *Stem* 2—3 ft. or more high, branched. *Flowers* 3 or 4 together,

axillary. *Petals* obcordate, usually large and of a purplish rose-colour with deeper veins, combined by the base of their claws. Dr. Bromfield finds in the Isle of Wight a variety with flowers of a sky-blue colour, another with prostrate stems, and a third with small flowers. Whole *plant*, especially the *fruit*, mucilaginous and emollient.

2. *M. rotundifolia* L. (*dwarf M.*); stem decumbent, leaves roundish cordate slightly and bluntly 5-lobed, fruit-stalks bent down, petals 2—3 times longer than the calyx, fruit pubescent, carpels smooth rounded on the edge. *E. B.* t. 1092.

Waste places and way-sides, not unfrequent in England; rare in Scotland, as about Edinburgh. *4.* 6—9. — *Stems* 10—12 inches long, branching only from the root. *Flowers* small, roundish. *Bractæas* linear-lanceolate. *Carpels* meeting at the line of junction with a straight line. Fries and some other foreign botanists consider the next to be the true *M. rotundifolia* L., and call this *M. vulgaris*, or *M. neglecta*.

3. *M. \* pusilla* Sm. (*small-flowered M.*); stem decumbent, leaves roundish-cordate slightly and bluntly 5-lobed, fruit-stalks bent down, petals the length of the calyx, fruit pubescent, carpels slightly reticulated margined. *E. B.* t. 241. *M. borealis* *Liljebl.*

Hythe, Kent: Hudson. ☉? 7. — Of this as a British plant we know nothing; only one specimen seems ever to have been found, and that was probably introduced with corn: seeds taken from it yielded the specimen from which the figure in the *E. B.* was made in 1795. Supposing it to be a distinct species from the last, the name originally given by Smith appears to be the oldest; but the pubescence of the fruit and reticulation of the carpels appear to vary so much in several allied species, that we fear these characters are only of secondary importance.

4. *M. moschata* L. (*Musk M.*); stem erect, radical leaves reniform in 5 or 7 broad cut lobes, cauline ones 5-partite pin-nato-multifid their segments linear, calyx hairy, leaflets of the involucre linear. *E. B.* t. 754.

Meadows, pastures, and road-sides, especially in a gravelly soil; not unfrequent. *4.* 7, 8. — *Stem* 2—3 ft. high. *Flowers* large, beautiful, rose-coloured, 1—2 from the axils of the terminal leaves. The foliage yields a faint musky smell if drawn through the hand.

(*M. verticillata* L., an erect plant, having leaves with 5 deep acute lobes, nearly sessile flowers scarcely longer than the calyx, and glabrous carpels rounded on the edge and scarcely reticulated, has been found near Llanelly in Wales; but it is neither a native of Britain, nor of Europe, unless as a cultivated plant: the wild state, which is unknown, may exhibit quite a different aspect and character.)

### 3. ALTHÆ'A Linn. Marsh-Mallow.

*Cal.* with a 6—9-leaved involucre. *Carpels* numerous, circu-

larly arranged, 1-seeded. — Name: *αλεω*, to cure; from its healing properties.

1. *A. officinális* L. (*common M.*); leaves soft and downy on both sides cordate or ovate toothed, entire or 3-lobed, peduncles axillary many-flowered much shorter than the leaves. *E. B.* t. 147.

Marshes, mostly near the sea. Abundant in Hampshire. Rare and scarcely indigenous to Scotland, as the Solway Frith, Arran, and Campsie. 4. 8, 9. — *Stem* 2—3 ft. high, remarkable for the dense, exquisitely soft, and starry pubescence of the *leaves* and *stems*. *Flowers* 3—4 together, on axillary *stalks*, large, pale rose-colour. — Affords an abundant mucilage, and a decoction of it is in very general use for the cure of cough. In France it is made into lozenges, called *Pâtes de Guimauve*.

2. *A. \*hirsúta* L. (*hispid M.*); leaves cordate rough with hairs, lower ones obtusely upper palmately and acutely lobed crenate, stem hispid, peduncles single-flowered longer than the leaves. *E. B. S.* t. 2674.

Fields and waste places, rare. Between Cobham and Cuxton, Kent. ☉. 6, 7. — Remarkable for its very hispid *stems* and *calyces*.

## ORD. XVII. TILIACEÆ Juss.

*Sepals* 4—5, deciduous, with valvular aestivation. *Petals* 4—5, often with a depression at the base, sometimes wanting. *Stamens* distinct or polyadelphous at the base, generally indefinite. *Anthers* 2-celled, opening longitudinally, introrse. *Glands* 4—5, adnate with the petals to the stalk of the ovary. *Ovary* 1—10-celled. *Style* 1. *Capsule* with one or many seeds in each cell. *Albumen* fleshy, including an erect embryo. — Trees or shrubs, with stipuled alternate leaves, and a mucilaginous wholesome juice, the inner bark exceedingly tenacious. — Russian- or bast-matting is the bark of the Lime.

### 1. TÍLIA Linn. Lime.

*Cal.* 5-partite. *Pet.* 5, with or without a nectary at the base. *Ovary* 5-celled; cells with 2 ovules. *Fruit* 1-celled, 1—2-seeded. — Name of obscure origin, perhaps from the Celtic; in modern Gaelic, the Lime is called *Teile*.

1. *T. parvifolia* Ehrh. (*small-leaved L.*); nectaries none, leaves smooth above glaucous beneath with scattered as well as axillary hairy blotches, branches and petioles glabrous, fruit oblique with filiform ribs chartaceous brittle at length nearly glabrous. *E. B.* t. 1705. *T. microphylla* Vent.

Woods in Essex, Lincolnshire, &c. Sussex, Wales; “safely to be

reckoned indigenous:" *Borrer*. *h*. 7, 8. — *Leaves* when young covered beneath with stellate hairs. *Angles* or ribs of the *fruit* often concealed by the pubescence before it falls off.

2. *T. \* Europa'a* L. (*common L. or Linden-tree*); nectaries none, leaves twice the length of the foot-stalks quite glabrous except a woolly tuft at the origin of each vein beneath, branches and petioles glabrous, fruit coriaceous downy nearly equal-sided with slightly prominent angles. *E. B.* t. 610. *T. intermedia DC.*

Woods and hedge-rows, probably not indigenous. *h*. 7? — *Leaves* pale beneath, but scarcely glaucous. A large and handsome *tree*; its *flowers* "at dewy eve distilling odours," yellowish-green, on a stalked *cyme*, springing from a large lanceolate foliaceous *bractea*, which falls off with the fructified *cymes*. Best distinguished from the last by the fruit. — *Linnaeus* is said to have derived his own name from the Swedish *Lin*, our Linden- or Lime-tree.

3. *T. \* grandifolia* Ehrh. (*broad-leaved downy L.*); nectaries none, leaves downy especially beneath with solitary hairs, origin of the veins woolly, young branches and petioles hairy, fruit woody downy with prominent angles. *E. B. S.* t. 2720.

Woods and hedges, in several places; scarcely wild. Blair in Athol, Scotland. Near Edinburgh. *h*. 6, 7. — The angles or ribs of the fruit are often obscure when young, but are afterwards prominent. The number of flowers in the umbel or cyme varies from 2 to 9 in all our British species.

## ORD. XVIII. HYPERICACEÆ.

*Sepals* 4—5, distinct or cohering, persistent, frequently with glandular dots. *Petals* 4—5, with a twisted aestivation and often black dots. *Stamens* numerous (15 or more), polyadelphous, rarely monadelphous or quite distinct. *Anthers* small, versatile. *Ovary* single. *Styles* 3—5, rarely combined. *Stigmas* simple. *Fruit* a capsule of several valves, rarely baccate, several-celled (or imperfectly so by the valves being curved inwards, and scarcely meeting in the axis), or 1-celled: dehiscence septicidal. *Seeds* minute, numerous, on a receptacle in the axis, or on the incurved margins of the valves. *Embryo* straight. *Albumen* 0. — Herbs or shrubs, with generally opposite leaves, mostly marked with pellucid dots, and commonly yellow flowers. Aromatic and resinous, juice sometimes purgative.

### 1. *HYPERICUM* Linn. St. John's Wort.

*Cal.* 5-partite, or of 5 sepals, inferior. *Pet.* 5. *Filaments* united at the base into 3 or 5 sets (or sometimes almost dis-

tinct). *Caps.* many-seeded. — Name: the *ὑπέρικον* of Dioscorides.

\* *Petals* unequal-sided, without any glands or appendages at the base or between the sets of the shortly connected stamens.

† *Styles* 5. *Petals* deciduous. Eremanthus.

1. II. \* *calycinum* L. (*large-flowered St. J.*); flowers solitary, segments of the calyx unequal obovate obtuse, leaves oblong, stem shrubby branched square. *E. B.* t. 2017.

Bushy places. Naturalized at Largs, and Balmacarra, Scotland; Ryde, Isle of Wight; and near Cork, Ireland. *h.* 7—9. — *Flowers* very large, yellow, as in all the genus. *Petals* and sets of stamens 5, deciduous. *Ovary* and capsule 5-celled, or 1-celled towards the summit.

†† *Styles* 3. *Petals* deciduous. *Stamens* shortly pentadelphous. Androsæmum.

2. H. *Androsæmum* L. (*Tutsan*); styles very short and recurved, capsule pulpy, stem shrubby compressed, sepals unequal, leaves ovate sessile. *E. B.* t. 1225.

Hedges and shrubby places; Norfolk; Herts; Kent; between Dorking and Guildford; and at Gt. Marlow, Bucks. Not rare in Devon, Hampshire, and Cornwall. Frequent in Ireland, and the west of Scotland. *h.* 6—8. — *Stems* 2 ft. high. *Leaves* large. *Cymes* terminal, of rather large flowers. *Stamens* deciduous. *Ovary* imperfectly 3-celled. *Fruit* fleshy and resembling a berry, especially when unripe. — The allied *H. grandifolium* Chois., with styles as long as the ovary, is said to have been found in the Isle of Arran in Scotland; but there must be some mistake, as it is an Azores plant.

††† *Styles* 3. *Petals* permanent. *Stamens* slightly triadelphous. (*Capsule* 3-celled septicidal.) Euhypericum.

§ *Sepals* entire at the margins or slightly toothed, but without glands.

3. H. *perforatum* L. (*common perforated St. J.*); stem 2-edged, leaves oblong obtuse with pellucid dots, sepals erect lanceolate acute. — *a.* leaves elliptic oblong. *E. B.* t. 295.—*β.* leaves linear-oblong, sepals more or less toothed.

Woods, thickets, hedges, &c., abundant. *h.* 7—9. — *Stem* 1—2 ft. or more high, branched. *Leaves* with sometimes only a few pellucid dots, but never with the venation of the next. There are minute black dots on the tips of the *cal.*, *cor.*, and often on the *leaves*. Valves of the capsule with two glandular lines on the back, their sides wrinkled with ovoid transverse vesicles.

4. II. *dubium* Leers (*imperfurate St. J.*); stem more or less quadrangular, leaves elliptic ovate obtuse nearly destitute of pellucid dots copiously reticulated beneath with pellucid veins, sepals reflexed. — *a.* sepals elliptical quite entire. *E. B.* t. 296.

—β. sepals oblong-lanceolate mucronulate obscurely denticulate.  
*H. maculatum Crantz.*

Rather mountainous woods in various places, but nowhere in great plenty. 4. 7, 8. — Similar in many respects to the last; for which, perhaps, it is not unfrequently mistaken. *Corolla* often marked with small black dots. Several intermediate forms occur between our two varieties. In both, as well as in the following six species, the capsule is striated at the base, with copious slender longitudinal glands.

5. *H. quadrangulum* L. (*square-stalked St. J.*); stem herbaceous 4-angled somewhat branched, leaves ovate with pellucid dots, sepals erect lanceolate acuminate. *E. B. t.* 370.

Moist pastures, sides of ditches and rivulets. 4. 7. — *Stem* 1—2 ft high. *Panicles* terminal. "Slightly fœtid like *H. hircinum*." *Bromf.*

6. *H. humifusum* L. (*trailing St. J.*); flowers terminal sub-cymose, stem compressed prostrate, leaves oblong obtuse glabrous. *E. B. t.* 1226.

Gravelly, heathy, and boggy pastures, stone walls, &c., in many places. 4. 7. — *Stem* slender, about a span long. *Stamens* not more than 5—8 in each of the three sets; whereas in the three preceding there are 10—25 in each. *Styles* very short. *Cor.* with black dots, as well as the *calyx*, on which they are frequently seen near the edge, but not, in our specimens, so distinctly as to justify the plant being placed in the next division.

#### §§ Margins of the sepals with glandular serratures.

7. *H. linariifolium* Vahl (*linear-leaved St. J.*); flowers terminal cymose, sepals lanceolate acute their margins with numerous black spots and glandular serratures, leaves linear obtuse the margins revolute, stem terete. *E. B. S. t.* 2851.

Cape Cornwall: on dry slopes of hills in several parts of Jersey, particularly on a hill between Ann Port and St. Catherine's Bay: banks of the Teign, Tamar, and Tavy, Devon. 4. 7, 8. — *Flowers* small. *Stem* procumbent below. *Stamens* 30 or more. *H. humifusum* differs from this by its prostrate slightly two-edged stems; oblong, obtuse, and mucronate sepals; oval-oblong leaves; smaller flowers; fewer stamens; broader capsules and shorter styles. *Bab.*

8. *H. pulchrum* L. (*small upright St. J.*); sepals broadly ovate obtuse with (black) glandular serratures, stem erect glabrous, leaves cordate amplexicaul glabrous. *E. B. t.* 1227.

Dry woods and heaths, frequent. 4. 6, 7. — *Stem* 1—2 ft. high, slender, erect, rigid, branched. *Flowers* beautiful, in loose panicles, yellow, tipped, before expansion, with red. *Anthers* red.

9. *H. hirsutum* L. (*hairy St. J.*); sepals lanceolate acute with (black) glandular serratures, stem erect rounded pubescent, leaves ovate or oblong slightly stalked somewhat downy beneath. *E. B. t.* 1156.

Woods and thickets, especially in a chalky soil. 4. 7, 8. — *Stem* 2 ft. high. *Leaves* rather large, more or less downy, especially beneath.

10. *H. montanum* L. (*Mountain St. J.*); flowers paniculato-corymbose, sepals lanceolate acute with (black) glandular serratures, stem erect rounded and as well as the ovate leaves glabrous. *E. B. t.* 371.

Bushy hills, in England, especially in a chalky or gravelly soil, but not common. 4. 7, 8. — *Stem* 1½—2 ft. high. *Leaves* rather large, more or less perforated, distant, especially above; furnished with black glandular dots near the margins. *Bractees* and *calyx* beautifully fringed with shortly-stalked glands. *Petals* without dots or glands.

11. *H. \*barbatum* Jacq. (*bearded St. J.*); corymbs terminal, sepals lanceolate fringed with long-stalked glands, stem erect rounded, leaves ovate with (black) scattered dots beneath. *E. B. t.* 1986.

Side of a hedge near Aberdalgie in Strathearn, Perthshire: *G. Don.* 4. 9, 10. — *Stem* 1 ft. or more high. Very distinct in the long glandular hairs of its *calyx*. *Petals* copiously dotted, often toothed or ciliated at the extremity. *Capsule* transversely wrinkled. We possess a specimen from Don; but we do not believe that this species was ever found wild in Scotland.

\*\* *Petals equal-sided. Stamens in each set united to above the middle, with a scale between the setæ. Styles 3. Elodea.*

12. *H. elodes* L. (*Marsh St. J.*); sepals with (reddish) glandular serratures glabrous, leaves roundish shaggy, stem rounded creeping, panicle of few flowers. *E. B. t.* 109.

Spongy bogs, not unfrequent. Rare in Scotland. 4. 7, 8. — *Stem* 6—8 inches long. *Flowers* few, panicled, terminal, pale yellow. *Petals* persistent, with a fringed appendage at the base. *Stamens* 15, triadelphous. *Ovary* and *fruit* 1-celled.

#### ORD. XIX. ACERACEÆ *Juss.*

*Calyx* 4—5—9-partite, imbricated in æstivation. *Petals* of the same number, with scarcely any claw, inserted into the margin of an hypogynous disk, or wanting. *Stamens* about 8, inserted on the disk. *Ovary* 2-lobed, 2-celled. *Style* 1. *Stigmas* 2. *Fruit* a double *Samara*, each 1-celled, with 1 or 2 erect seeds. *Albumen* 0. *Embryo* curved, with foliaceous wrinkled cotyledons, and an inferior radicle.—Trees, of the temperate parts of the northern hemisphere. Leaves generally simple and lobed; flowers often polygamous.—*Acer saccharinum* of N. America yields *Maple Sugar*.

##### 1. A'cer *Linn.* Maple.

*Flowers* polygamous. *Cal.* lobed or partite. *Cor.* of several



petals. — Named from *acer*, sharp or hard (*ac*, Celtic), on account of the hardness of the wood, which was employed in fabricating spears, spikes, &c.

1. *A. \*Pseudo-plátanus* L. (*greater M.* or *Sycamore*); leaves 5-lobed unequally serrated, racemes pendulous, wings of fruit slightly diverging. *E. B.* t. 303.

In hedges, plantations, and about houses. *h.* 5, 6. — A large tree, with spreading branches and ample leaves. Flowers greenish. Fruit glabrous, furnished with two long membranaceous wings, which greatly aid in its dispersion. The wood is used for bowls and trenchers and other turnery.

2. *A. campéstre* L. (*common M.*); lobes of the leaves mostly 5 inciso-crenate, racemes upright submentose, wings of fruit diverging horizontally. *E. B.* t. 304.

Woods and thickets, not common in Scotland, and perhaps neither indigenous there nor in Ireland. *h.* 5, 6. — A small tree, with rough bark, full of deep fissures. Leaves small. Wood often beautifully veined, and then much prized.

## ORD. XX. GERANIACEÆ *Juss.*

*Sepals* 5, persistent, with an imbricated æstivation. *Petals* 5, with a claw. *Stamens* generally monadelphous and twice as many as there are petals, some occasionally abortive. *Ovary* 5-lobed, terminated by a long thick beak (*torus* or *gynobase*), and 5 stigmas. *Carpels* 5, 1-celled, ultimately separating from the base of the beak, together with a long elastic awn (the *style*). *Seed* solitary, without *albumen*. *Embryo* curved. *Cotyledons* convolute and plaited. — Herbs or shrubs, with leaves opposite at the joints, or alternate and then opposite the peduncles. No tendrils.

1. GERANIUM. Capsules with a long glabrous recurved awn.

2. ERODIUM. Capsules with a long spiral awn, which is bearded on the inside.

### 1. GERANIUM *Linn.* Crane's-bill.

*Pet.* regular. *Stam.* 10, slightly monadelphous; 5 outer ones opposite the petals, rarely sterile; the other 5 alternating, larger, with a gland at their base. *Caps.* each with a long glabrous recurved awn. — Name: *γεράνιον* of the Greeks, from *γέρων*, a crane; the fruit resembling the peak of a crane.

\* *Peduncles* 1-flowered.

1. *G. sanguineum* L. (*bloody C.*); leaves nearly orbicular in 5—7 deep lobes each of which is trifid, carpels even with bristly hairs at the summit. — *α.* flowers purple. *E. B.* t. 272. — *β.*

prostrate, flowers flesh-coloured with purple veins. *G. Lancastriense* *With.*

Alpine or limestone pastures, in many places; but not very general. — *β.* Sands in Walney Island, Lancashire. *℥.* 7. — *Stem* 1—1½ ft. high, swelling at the joints. *Peduncles* axillary, long. *Flowers* large, handsome.

**\*\* *Peduncles* 2-flowered. *Root* perennial.**

2. *G. phæum* L. (*dusky C.*); peduncles opposite the leaves, calyx slightly awned, petals waved, capsules keeled hairy below transversely wrinkled above, stem erect. *E. B.* t. 322.

Woods and thickets, but usually the outcast of a garden. *℥.* 5, 6. — *Stem* 2 ft. or more high, dichotomously branched. *Leaves* 3—7-lobed, lobes acute, cut and serrated. *Flowers* very dingy, purple-black: a *var.* with white flowers is found on the sands of Barrie near Dundee.

3. *G. \*nodosum* L. (*knotty C.*); stem glabrous, leaves opposite with 5 or 3 deep pointed serrated lobes, petals with a deep notch, sepals long-awned, capsules even downy all over. *E. B.* t. 1091.

Said to have been gathered in the mountainous parts of Cumberland, and between Hatfield and Welwyn, Herts; but no specimens have been observed there for many years. *℥.* 5—8. — Allied to this in the fruit and in several other respects, but differing by the hairy stem, is *G. striatum*, stated to grow on a rabbit-warren near Flimby, between Workington and Maryport, Cumberland, "opposite the first gate after the road has turned from the valley of the Derwent to follow the coast towards Maryport." See *Comp. Bot. Mag.* i. 296. But both this and *G. nodosum* are plants almost peculiar to a southern climate, and cannot be expected to be indigenous to us.

4. *G. sylvaticum* L. (*Wood C.*); pedicels of fruit erect, leaves subpeltate with 5 or 7 deep and acute lobes which are cut and serrated, stem erect corymbose, petals obovate slightly notched, their claws bearded, sepals awned, stamens subulate, capsules keeled even hairy, seeds dotted. *E. B.* t. 121.

Woods, thickets, and sides of rivers, chiefly in subalpine countries. *℥.* 6, 7. — *Stem* 1—3 ft. high. *Flowers* purple, rather larger than those of *G. phæum*, but much smaller than in the following species. Specimens with smaller and pale rose-coloured flowers sometimes occur.

5. *G. pratense* L. (*blue Meadow C.*); pedicels of fruit deflexed, leaves 5-partite, lobes multipartite all the segments acute, petals obovate slightly notched their claws ciliated (not bearded), stamens dilated at the base, capsules even hairy, seeds minutely reticulated. *E. B.* t. 404.

Pastures and moist thickets, particularly near cascades in mountainous countries. About London. *℥.* 6—9. — *Stem* 1—2 ft. high. Distinguished by its large purple flowers and multipartite leaves.

6. *G. Pyrenæicum* L. (*Mountain C.*); leaves reniform 5—7-lobed, lobes oblong obtuse trifid and toothed at the extremity, stem erect branched softly hairy, petals with a deep notch twice as long as the mucronate sepals, capsules keeled even slightly downy, seeds without dots. *E. B.* t. 405.

Meadows and pastures in many places, but not frequent. 4. 6, 7. — *Stem* 2—3 ft. high, much branched. Claws of *petals* densely bearded. Distinguished by the very obtuse segments of its lower *leaves* (for the upper ones are acute and less divided), and its rather small, numerous, purple *flowers*, with cleft *petals*. The *root* of this is fusiform; in all the former it consists of long fibres arising from a præmorse tap-root.

\*\*\* *Peduncles* 2-flowered. *Root* annual.

7. *G. lucidum* L. (*shining C.*); leaves roundish 5-lobed, lobes trifid and notched obtuse with a short mucro, calyx pyramidal angular dentato-tuberculate, claw of petals glabrous, capsules transversely wrinkled, seeds without dots. *E. B.* t. 75.

*Rocks*, walls, and roofs of houses, especially hilly and mountainous countries. ☉. 5—8. — *Stems* spreading, shining (as are the *leaves*), brittle, swelling at the joints. *Leaves* small, lower ones reniform, often of a fine red. *Flowers* small, rose-coloured.

8. *G. Robertianum* L. (*stinking C.* or *Herb-Robert*); leaves 2 with 3 or 5 deep lanceolate inciso-pinnatifid acuminate segments, calyx angular hairy, claw of petals glabrous, capsules transversely wrinkled, seeds without dots. *E. B.* t. 1486.

Woods, thickets, stony and waste ground, frequent. A small *var.* is common by the sea-side, the  $\beta$  of *Smith*: it is the *G. purpureum* of Mill. and of Forster in *E. B.* s. t. 2648, *G. Raii*, Lindl. Syn. p. 57. ☉. 5—9. — *Stems* spreading, red, brittle. *Flowers* purple, sometimes white.

9. *G. molle* L. (*Dove's-foot C.*); leaves rounded or reniform lobed and cut downy, their segments obtuse, petals notched scarcely longer than the calyx, their claws bearded, capsules transversely wrinkled, seeds without dots. *E. B.* t. 778.

Dry pastures and waste places, common. ☉. 4—8. — *Stems* spreading, procumbent, with long hairs. *Leaves* lobed; lobes broad, cut. *Flowers* small, purple. *Seeds* smooth.

10. *G. pusillum* L. (*small-flowered C.*); petals notched, anther-bearing stamens 5, leaves rounded or reniform palmate with 5—7 deep trifid lobes, capsules smooth carinated downy with erect appressed hairs, seeds without dots. *E. B.* t. 385.

Waste ground and in gravelly soils, frequent, less common in Scotland. About Edinb. and Glasgow. ☉. 6—9. — *Stem* weak, prostrate. *Leaves* deeply lobed. *Flowers* very small, bluish-purple.

11. *G. rotundifolium* L. (*round-leaved C.*); leaves roundish or reniform palmately lobed and cut downy, petals entire the length of the calyx, capsules even hairy, seeds dotted. *E. B.* t. 157.

Pastures and waste ground, but not common. ☉. 6, 7.— Distinguished from the two last by the entire *petals*, and dotted *seeds*, and from the first of them likewise by the smooth or even *capsules*.

12. *G. disséctum* L. (*jagged-leaved C.*); petals notched rather shorter than the much-awned calyx, leaves 5-partite, lobes linear trifid or cut, capsules even hairy, seeds dotted. *E. B.* t. 753.

Hedges and pastures, gravelly and waste places. ☉. 5—8.— *Stems* spreading. Characterized by the much-divided *leaves* and the short *foot-stalks* of the blossoms, which, as Curtis observes, thus appear as if sitting among the leaves.

13. *G. columbínium* L. (*long-stalked C.*); peduncles longer than the leaves which are 5-partite, the lobes divided into many acute segments, petals entire as long as the much-awned calyx, capsules even glabrous, seeds dotted. *E. B.* t. 259.

Dry pastures in several parts of Great Britain, in a gravelly or limestone soil. ☉. 6, 7.— *Stem* very slender, procumbent, its hairs, as in *G. disséctum*, reflexed. *Capsules* quite glabrous, or sometimes with a few minute scattered hairs.

## 2. ERÓDIUM *L'Hérit.* Stork's-Bill.

*Pet.* regular. *Stam.* 10, slightly monadelphous at the base; 5 opposite the petals, sterile; the other 5 alternating with a *gland* at their base. *Caps.*, each with a long spiral *awn*, bearded on the inside. — Name: *ερωδιος*, a *heron*; the fruit resembling the beak of that bird.

1. *E. cicutárium* Sm. (*Hemlock S.*); peduncles many-flowered, leaves pinnate, leaflets sessile pinnatifid and cut, petals longer than the calyx, stems prostrate hairy. *E. B.* t. 1768.

Waste ground, frequent. ☉. 6—9.— Whole plant hairy. *Flowers* in small *umbels*, purplish, sometimes white. Perfect *stamens* glabrous, dilated, but not toothed at the base. Beak of *fruit* hairy or glabrous.

2. *E. moschátum* Sm. (*musky S.*); peduncles many-flowered, leaves pinnate, leaflets nearly sessile ovate unequally cut, perfect stamens toothed at the base, stems depressed hairy. *E. B.* t. 902.

Waste places, rare. Frequent in Guernsey and Jersey. In the Craven of Yorkshire, and in Westmoreland. Near Bristol; Shotover Hill, Oxford, and on Amptill warren, Bedfordshire. Near Plymouth. Simmond's Court, Carlingford Castle, and Monkton Church; Ireland. Bank near Countess Wear Bridge, on the Exe, Devon. Near Gresford. ☉. 6, 7.— Larger than the last, and with much less deeply cut *leaflets*, which yield a powerful smell of musk.

3. *E. marítimum* Sm. (*Sea S.*); peduncles 1—2-flowered,

leaves simple ovato-cordate stalked lobed and crenate, stems depressed slightly hairy. *E. B.* t. 646.

Sandy and gravelly sea-coasts, but rare; as in Sussex, Wales, Cornwall, and Isle of Wight. Steep-Holmes, and near Bristol, far from the sea. Glenluce, Galloway. Hill of Howth, Ireland. 4. 5—9. — *Flowers* exceedingly small and inconspicuous. *Petals* fugacious.

## ORD. XXI. BALSAMINACEÆ *Rich.*

*Flowers* very irregular. *Sepals* 5, or 4 by the union of the two inner or upper ones, lowest cucullate with a spur. *Petals* 5, or apparently 2, by the want of the uppermost and the cohesion in pairs of the two lateral ones. *Stamens* 5; *filaments* more or less united at the extremity: *anthers* 2-celled. *Ovary* of 5 cells alternating with the stamens. *Stigmas* 5, almost sessile, distinct or united. *Fruit* a capsule bursting with 5 elastic valves, or succulent and indehiscent. *Seeds* solitary or numerous, suspended. *Albumen* 0. *Embryo* straight with *radicle* superior. — Herbaceous and succulent plants, without stipules.

### 1. IMPATIENS *Linn.* Balsam.

*Flowers* of apparently 4 *sepals* and 2 *petals*. *Capsule* of 5 elastic valves. — Name (*impatient*) from the sudden opening of the valves of the capsule, when the fruit is touched.

1. I. \**Noli-me-tângere* L. (*yellow B.* or *Touch-me-not*); joints of the stem swelling, leaves ovate serrated petiolate, peduncles solitary many-flowered, spur of calyx loosely recurved and entire at the point. *E. B.* t. 937.

Moist shady woods in Yorkshire, Westmoreland, Lancashire, and some other counties in England and Wales; also at Castlemilk near Glasgow; — but perhaps only escaped from cultivation or planted. ☉. 7—9. — *Stem* generally 1 ft. high, rounded, succulent, fragile. *Flowers* large, yellow, spotted with orange. *Capsule* bursting elastically and scattering its *seeds* with considerable force; the valves are then spirally twisted.

(*I. fulva* Nutt. of N. America grows on the banks of the Wey, the Basingstoke Canal, and the Thames, from Guildford and Woking Heath to Chiswick. The spur of the calyx is notched at the point, and so closely reflexed as to be pressed against the sepals. *E. B. S.* t. 2794.)

## ORD. XXII. OXALIDACEÆ *De Cand.*

*Flowers* regular. *Sepals* 5, persistent. *Petals* 5, equal, often cohering at the base and twisted in æstivation. *Stamens* 10, the 5 inner ones opposite the petals and longer than the others;

*anthers* distinct, 2-celled. *Ovary* 1, 5-celled. *Styles* 5. *Stigmas* usually capitate or somewhat bifid. *Fruit* a capsule with 5 or 10 valves, or indehiscent. *Seeds* attached to the axis, usually with an elastic fleshy outer integument, which, on bursting open, projects the seed to a distance. *Embryo* in a cartilaginous *albumen*, with its *radicle* towards the *hilum*. — *Mostly* herbs, with *compound acid* leaves; some of them highly sensitive. — *Oxalis Acetosella* abounds in oxalic acid. *O. crenata* of Peru affords a salad in its leaves, and its tubers are eaten as potatoes, but they are not worth a place in a European kitchen-garden.

### 1. O'XALIS Linn. Wood-Sorrel.

*Cul.* not bracteated at the base. *Filaments* slightly combined below. *Caps.* angular, 5-celled. *Seeds* with an elastic integument. — Named from *oxus*, sharp or acid.

1. *O. Acetosella* L. (*common W.*); leaves all radical ternate, leaflets inversely heart-shaped hairy, scape single-flowered, root scaly. *E. B.* t. 762.

Woods and shady places, frequent; also at a great elevation on the mountains, among shady rocks. ☉. 5, and on the mountains till 8. — *Leaf-stalks* long and slender, reddish. *Leaflets* drooping at night. *Scape* with two scaly *bracteas*. *Flowers* handsome, drooping, white, with purplish veins. The leaves have a most agreeable acid flavour. — This appears to be the original *Seamrog* or *Shamrock* of Ireland; although the name has long been applied to the much less beautiful *Trifolium repens* or Dutch Clover, both in the Irish and Gaelic languages.

2. *O. corniculata* L. (*yellow procumbent W.*); stem branched, branches procumbent, peduncles mostly 2-flowered shorter than the ternate leaves, stipules united to the base of the petioles. *E. B.* t. 1726.

Shady waste ground, chiefly in the extreme south of England. Devonshire. ☉. 6—9.

(*O. stricta* L. is stated to be naturalized in gardens near Penzance; at Ilstrington, Devon; in fields near Northam, North Devon; and in an Orchard at Cuckfield, Sussex. This latter station is generally given for *O. corniculata*, from which *O. stricta* differs by having a more upright, less branched stem, more numerous and often whorled leaves, with longer flower-stalks and several flowers in an umbel, and no evident stipules at the base of the petioles.)

### ORD. XXIII. STAPHYLEACEÆ Lindl.

*Sepals* 5, connected at the base, imbricated in æstivation. *Petals* 5, alternate with the sepals, inserted into or under the margin of a free crenated concave hypogynous disk, imbricated

in æstivation. *Stamens* 5, opposite the sepals, inserted into the margin of the disk. *Ovary* free, of 2—3 carpels distinct or more or less cohering. *Styles* 2—3 distinct or combined. *Fruit* membranous, chartaceous, or fleshy. *Seeds* globose, bony, with a large truncate *hilum*, little or no *albumen*, thick *cotyledons* and short *radicle*. — Shrubs. Leaves usually opposite, pinnate, with common and partial deciduous stipules. Flowers in terminal stalked racemes.

### 1. STAPHYLÉA Linn. Bladder-Nut.

*Cal.* coloured. *Pet.* erect during flowering. *Carpels* united more or less at the base. *Caps.* membranaceous, bladdered. — Name from *σταφύλη*, a bunch of grapes, its flowers being in racemes.

1. *S. \*pinnáta* L. (common *B.*); leaves pinnate, petioles without glands, styles 2. *E. B.* t. 1560.

Thickets and hedges, scarcely naturalized. Yorkshire; about Ashford, Kent. *h.* 6. — A plant of Eastern Europe, without any title to be received into the British Flora, except that of custom.

## SUB-CLASS II. CALYCIFLORÆ. (ORD. XXIV.—XLIX.)

*Corolla* (and usually the *stamens*) perigynous or inserted upon the *calyx*. *Ovary* either free or adnate with the tube of the *calyx*.

### CONSPECTUS OF THE ORDERS.

A. *Corolla polypetalous.*

a. *Corolla papilionaceous.*

26. LEGUMINOSÆ.

b. *Corolla regular; stamens 20 or more.*

27. ROSACEÆ. Leaves with stipules.

c. *Corolla regular; stamens fewer than 20.*

\* *Carpels 2 or more; distinct or nearly so (apocarpous).*

[23. STAPHYLEACEÆ. *Calyx* with a large free disk at its base, inside;]  
27. ROSACEÆ. Leaves with stipules. Conspicuous free disk none.

35. CRASSULACEÆ. Leaves without stipules. Disk none.

\*\* *Carpels united into a solitary 1-celled ovary.*

33. PORTULACÆÆ. Sepals 2. *Ovary* superior. Placenta central. Leaves without stipules.

[14. CARYOPHYLLACEÆ, § ALSINÆÆ. Sepals 4—5. *Ovary* superior. Placenta central. Leaves without stipules.]

34. PARONYCHIACEÆ. Sepals 5. *Ovary* superior. Placenta central or ovule solitary. Leaves with stipules.

[10. DROSERACEÆ, § PARNASSIÆ. Sepals 5. *Ovary* superior. Placentas 4, parietal. Ovules numerous, not comose. Stigmas 4, sessile, simple.]

31. TAMARICACEÆ. Ovary superior. Placentas 3, parietal. Ovules numerous, comose. Stigmas 3, sessile, plumose.
36. GROSSULARIACEÆ. Stamens alternate with the petals. Ovary inferior. Ovules several.
41. LORANTHACEÆ. Stamens opposite to and upon the petals. Ovary inferior. Ovule solitary.

\*\*\* *Carpels united into a solitary 2- (or many-) celled ovary.*

- [52. MONOTROPACEÆ. Sepals distinct; imbricated in æstivation. Stamens twice as many as the petals, almost hypogynous. Style 1. Ovary superior. Green leaves wanting.
51. PYROLACEÆ. Calyx deeply divided; imbricated in æstivation. Stamens twice as many as the petals, nearly hypogynous. Style 1. Ovary superior. Leaves green, without stipules.]
30. LYTHRACEÆ. Calyx of one piece with teeth; valvate in æstivation. Stamens inserted on the mouth of the calyx, alternate with the petals when as few. Style 1. Ovary superior.
37. SAXIFRAGACEÆ. Calyx deeply divided or spreading; imbricated in æstivation. Stamens twice as many as the petals. Styles 2 or more. Fruit superior or only partly so. Seeds numerous in each cell.
25. RHAMNACEÆ. Calyx valvate in æstivation. Stamens as many as and opposite to the minute petals. Fruit superior or partly so.
24. CELASTRACEÆ. Calyx spreading; calyx and petals imbricated in æstivation. Stamens as many as the petals and alternating with them. Disk large, expanded, flat, closely surrounding the ovary, and covering the flat bottom of the calyx. Fruit superior or partly so, dehiscent, seeds never bony. Leaves simple.
- [23. STAPHYLEACEÆ. Calyx deeply divided, erect; calyx and petals imbricated in æstivation. Stamens as many as the petals and alternating with them. Disk large, free. Ovary quite free. Fruit superior. Seeds bony. Leaves pinnate.
28. ONAGRACEÆ. Calyx-segments valvate; petals convolute in æstivation. Style 1. Ovary inferior.
29. HALORAGACEÆ. Moraceous. Sepals 4. Stamens 8. Styles 4. Fruit inferior, splitting into 4 indehiscent 1-seeded achenes. Leaves opposite or verticillate.
38. UMBELLIFEREÆ. Petals 5, imbricated in æstivation. Stamens 5, alternating with the petals. Styles 2. Fruit inferior, splitting into 2 indehiscent 1-seeded carpels. Leaves alternate.
39. ARALIACEÆ. Petals valvate in æstivation. Styles several, distinct or combined. Fruit inferior, baccate; cells each 1-seeded. Leaves alternate.
10. CORNACEÆ. Petals 4, valvate in æstivation. Stamens 4, alternating with the petals. Style 1. Ovary inferior. Leaves opposite.

B. *Corolla monopetalous.*

\* *Ovary inferior or partly superior, with one perfect cell.*

† *Ovules several in each cell.*

- [66. PRIMULACEÆ. Flowers perfect. Placenta central, free. Erect plants.]
32. CUCURBITACEÆ. Flowers imperfect. Placentas parietal. Plants with tendrils.

†† *Ovules solitary in each cell.*

46. COMPOSITEÆ. Flowers upon a receptacle, within a common involucre.



Anthers of the perfect flowers united. Ovule erect. Albumen wanting.

45. DIPSACACEÆ. Flowers perfect, upon a receptacle, within a common involucre. Anthers and filaments distinct. Ovule pendulous. Albumen fleshy. Leaves opposite.
44. VALERIANACEÆ. Flowers cymose, without an involucre. Anthers and filaments of perfect flowers distinct. Ovule pendulous. Albumen wanting. Leaves opposite.

**\*\* Ovary inferior or only partly inferior, with 2 or more perfect cells.**

39. ARALIACEÆ. Styles 4—5. Leaves alternate.
42. CAPRIFOLIACEÆ. Stamens inserted upon the corolla. Style 1, or none and stigmas 3 sessile. Leaves opposite without interpetiolar stipules.
43. RUBIACEÆ. Stamens inserted upon the corolla. Styles 1 or 2. Leaves opposite with interpetiolar stipules, or leaves verticillate.
48. LOBELIACEÆ. Stamens free from the corolla; anthers opening longitudinally, as many as the lobes of the corolla, united, dissimilar. Style 1, fringed below the stigma.
47. CAMPANULACEÆ. Stamens free from the corolla; anthers opening longitudinally, as many as the lobes of the corolla, similar. Style 1, not fringed below the stigma.
49. VACCINIACEÆ. Stamens free from the corolla and twice as many as its lobes; anthers opening by pores.

**\*\*\* Ovary entirely superior. Stamens free from the corolla.**

35. CRASSULACEÆ. Carpels and styles several, distinct.
- [50. ERICACEÆ. Style 1, with an hypogynous disk. Seed-coat close to the nucleus.
51. PYROLACEÆ. Style 1, without an hypogynous disk. Seed-coat chaffy.]

## A. COROLLA POLYPETALOUS. (ORD. XXIV.—XLI.)

### ORD. XXIV. CELASTRACEÆ *R. Brown*.

*Calyx* 4—5-cleft, its base covered with a large, flat, fleshy disk, imbricated in æstivation. *Petals* 4—5, alternate with the sepals arising from the edge of the disk. *Stamens* 4—5, alternate with the petals. *Ovary* wholly or in part immersed in the disk, 2—5-celled. *Cells* with 1 or many seeds. *Fruit* a capsule with 3—5 cells, and 3—5 septiferous valves, or a dry drupe with 1 or 2 cells. *Seeds* erect, often arillate, never bony. *Albumen* copious, fleshy, with a straight embryo, flat cotyledons, and an inferior radicle.—Shrubs, with simple, mostly opposite leaves, and axillary cymes.

#### 1. *EUONYMUS* Linn. Spindle-Tree.

*Cal.* flat, 4—5-cleft, having a peltate disk within. *Pet.* 4—5. *Stam.* alternating with the petals, inserted upon the disk. *Caps.* with 3—5 angles, and as many cells and valves. *Seeds* with a

coloured fleshy *arillus*. — Named from *Euonyme*, mother to the Furies, in allusion to the injurious effects produced by the fruit of these plants.

1. *E. Europæus* L. (*common S.*); flowers mostly tetrandrous, petals oblong, branches 4-angled glabrous, leaves ovato-lanceolate, minutely serrate. *E. B.* t. 362.

Woods and hedges; frequent in England, and the south of Ireland, scarcely wild in Scotland. *h.* 5, 6. — *Shrub* 3—5 ft. high. *Bark* green, smooth. *Leaves* glabrous. *Peduncle* bearing a few-flowered *umbel*. *Flowers* small, white. *Fruit* obtusely angular, very beautiful, rose-coloured. *Arillus* orange-coloured. The *berries* and even *leaves* are said to be dangerous, and the whole plant is fetid. Of its tough white wood skewers and spindles are made, and Linnæus tell us it affords the best charcoal for drawing.

ORD. XXV. RHAMNACEÆ *Juss.*

*Calyx* 4—5-cleft, valvate in æstivation. *Petals* 4—5, inserted on the summit of the tube of the calyx, shorter than and alternate with its lobes, sometimes wanting. *Stamens* 4—5, alternate with the calycine lobes. *Ovary* inferior, wholly or in part superior, 2—4-celled; *cells* with one erect ovule. *Fruit* fleshy and indehiscent, or dry and dehiscent. *Seeds* erect. *Albumen* fleshy, rarely wanting. *Embryo* straight; *cotyledons* large and flat; *radicle* inferior. — Shrubs or small Trees, with simple usually alternate leaves, minute stipules, and small greenish flowers. Fruit of some purgative, as our *Rhamnus catharticus*; in others the fruit yields a dye, as *R. infectorius*, &c. *Zizyphus Lotus* is supposed to be one kind of *Lotus* of the ancients. *Jujubes* are the produce of the fruit of *Z. vulgaris*.

1. RHÁMNUS *Linn.* Buckthorn.

*Cal.* urceolate, 4—5-cleft. *Pet.* nearly flat and notched, often wanting. *Stamens* with ovate, 2-celled *anthers*. *Disk* thin, covering the tube of the calyx. *Ovary* superior, 3—4-celled. *Berry* with 2—4 cartilaginous nuts, each 1-seeded. — Name, *ῥαμνος*, in Greek, a *branch*; from its numerous branches.

1. *R. cathárticus* L. (*common B.*); spines terminal, flowers 4-cleft diœcious, leaves ovate sharply serrated. *E. B.* t. 1629.

Woods, hedges, and thickets, not unfrequent in England. About Dumfries, Scotland. Near Cork and Lough Erne, in Ireland. *h.* 5—7. — A spreading *shrub*. *Leaves* with 4 or 6 strong lateral nerves parallel with the margin or rib; *serratures* glandular. *Flowers* in dense fascicles. In the *barren* flower the *petals* are oblong-ovate, in the *fertile* one they are linear, incurved above, but not cucullate. *Styles* 4, united half-way up, spreading. *Seeds* with a deep external furrow. *Embryo* bent or slightly folded longitudinally. *Berries*

black, nauseous, powerfully cathartic: they afford a *yellow* dye in an unripe state; the bark a *green* dye.

2. *R. Frángula* L. (*Alder B.*); unarmed, flowers 5-cleft perfect, leaves obovate entire. *E. B. t.* 250.

Woods and thickets in England. Near Auchincruive, Ayrshire. *h.* 5, 6. — A small *shrub*. Flowers stalked, axillary, 2—3 together, somewhat fascicled, whitish-green. Petals very minute. Style 1. Berries dark purple, purgative. Seeds 2, even, compressed. Embryo flat.

## ORD. XXVI. LEGUMINOSÆ Juss.

*Calyx* of 4—5 sepals, more or less combined, the fifth segment inferior. Petals various, generally 5 and papilionaceous. Stamens various, generally 10, monadelphous or diadelphous. Ovary 1-celled, bearing the ovules along the upper margin, sometimes stalked. Style and Stigma 1. Legume 2-valved, dehiscent or indehiscent. Seeds usually without albumen. Embryo with the radicle straight or recurved upon the cotyledons. — Trees, Herbs, or Shrubs. Leaves alternate, mostly compound and pinnated, with or without tendrils, stipuled. — They possess very various principles and properties, and many of the plants composing this Order are of the greatest service in the arts, in medicine, and domestic economy. *Indigofera* affords *Indigo*; *Glycyrrhiza*, *Liquorice*; *Astragalus*, *Gum Tragacanth*; *Soja*, *Soy*; *Mucuna*, *Cow-itch* or *cow-age*; *Erythrina*, *Gum-lac*; *Pterocarpus*, *Gum-dragon*, and *Sauvaders-wood*; *Brya*, *Jamaica Ebony*; *Acacia*, *Gum-Arabic*, and one kind of *India-rubber*; *Dipterix*, the *Tonquin bean*; *Hæmatoxylon*, *Log-wood*; *Cassia* yields *Senna*, and other potent drugs; *Copaifera*, *Balsam of Copaiva*; *Hymenæa*, *Gum Anime*. Their seeds yield food for man and various animals, their herbage for cattle. — All the British genera are papilionaceous, with the standard superior and a vexillary æstivation, and have 10 stamens, monadelphous or diadelphous (9 and 1, the solitary stamen being superior).

### I. Stamens monadelphous. GENISTEÆ.

1. ULEX. Calyx hibracteolate, 2-lipped; upper 2-toothed, lower 3-toothed, Keel blunt. Legume turgid. Leaves simple.
2. GENISTA. Calyx 3-cleft, upper segments entire, lower one 3-toothed. Keel blunt. Leaves simple or trifoliate.
3. SAROTHAMNUS. Calyx ebracteolate, 2-lipped, upper 2-toothed, lower 3-toothed. Keel blunt. Legume flat. Leaves simple or trifoliate.
4. ONONIS. Calyx nearly equally 5-cleft. Keel rostrate. Leaves simple or trifoliate.
5. ANTHYLIS. Calyx nearly equally 5-toothed, inflated. Keel without a beak. Leaves pinnate.

II. *Stamens diadelphous. Leaves 3—5-foliolate. TRIFOLIEÆ.*

6. *MEDICAGO.* Legume falcate or spirally twisted. Keel of cor. obtuse. Calyx-teeth nearly equal.
7. *MELILOTUS.* Legume nearly straight. Keel obtuse. Calyx-teeth nearly equal. Flowers in long racemes.
8. *TRIGONELLA.* Legume straight or slightly curved, many-seeded, much longer than the calyx. Petals distinct. Keel obtuse. Flowers capitate or in short racemes.
9. *TRIFOLIUM.* Legume and ovary nearly straight, 1—4-seeded, scarcely longer than the calyx. Petals cohering by their claws. Keel obtuse. Calyx-teeth unequal. Flowers capitate or in short racemes.
10. *LOTUS.* Legume nearly straight. Keel rostrate.

III. *Stamens diadelphous. Leaves pinnate. Tendrils 0. Legume dehiscent, several-seeded, imperfectly 2-celled by the introflexion of one of the sutures. ASTRAGALEÆ.*

11. *OXYTROPIS.* Keel acuminate. Legume with the upper or seed-bearing suture inflexed.
12. *ASTRAGALUS.* Keel obtuse. Legume with the lower suture inflexed.

IV. *Stamens diadelphous. Leaves pinnate. Tendrils 0. Legume indehiscent, divided transversely into one or more 1-seeded cells. HEDYSAREÆ.*

13. *ORNITHOPUS.* Flowers umbellate, bracteate. Keel small, obtuse. Legume compressed, contracted on both sides at the joints.
14. *ARTHIROLOBIUM.* Flowers umbellate, without bracteas. Keel small, obtuse. Legume terete, scarcely contracted at the joints.
15. *HIPPOCREPIS.* Flowers umbellate. Keel acuminate. Legume straight on one side, much contracted on the other at the joints.
16. *ONOBRYCHIS.* Flowers racemose. Legume of a single 1-seeded joint.

V. *Stamens diadelphous. Leaves pinnate or apparently simple, usually with tendrils. Legume 2-valved, several-seeded, the suture not introflexed. VICIEÆ.*

17. *VICIA.* Style filiform or angular, equally hairy all round below the point, or mostly so on the under-side.
18. *LATHYRUS.* Style dilated upwards, flat, pubescent only on the upper side below the apex. Leaves with tendrils or apparently simple.
19. *OROBUS.* Style flat or dilated upwards, pubescent only on the upper side. Leaves pinnate without tendrils.

Tribe I. *GENISTEÆ. Legume 1-celled. Stamens mostly monadelphous. Leaves simple or trifoliolate, rarely pinnate. Stems generally shrubby. Gen. 1—5.*

1. *U'LEX* Linn. Furze.

*Cal.* 2-lipped, with a small scale or *bractea* on each side at the base; lips nearly entire or upper one 2-toothed, lower 3-toothed. *Legume* turgid, few-seeded, scarcely longer than the calyx. — *Leaves* simple. — Name from the Celtic *uile*, all; and also, according to Thésis, from *ec* or *ac*, a sharp point; whence,

too, arises the French name *ajonc* or *acjonc*, a sharp or spiny rush.

1. *U. Europæus* L. (common *F.*, *Whin*, or *Gorse*); calyx somewhat hirsute with slightly spreading hairs the teeth nearly obsolete, bractæ large ovate lax, wings manifestly longer than the keel and imbricated over it. — *α.* much branched and spreading, spines usually rigid. *E. B. t.* 742. — *β. strictus*, branches upright, compact, spines soft. *U. strictus* Mackay.

Heathy places, especially in sandy or gravelly soils; rare in the Scottish Highlands. *h.* 2—7. — *Shrub* 3—4 or more ft. high, with innumerable green striated branches, clothed with acute branching spines, and having at their base a few leaves, which are lanceolate, a little hairy, very minute. *Cal.* coarsely pubescent. *Cor.* bright yellow; wings straight, incurved. *Legumes* opening elastically, and shedding their seeds the same year they come to maturity. *Var. β.* was discovered in Lord Londonderry's park, county of Down, by Mr. J. White; it is readily propagated by cuttings, and now well known in our gardens and nurseries under the name of *Irish Furze*. It bears few flowers, but may be at all times distinguished from the *var. α.* by its smaller size, its dense and compact, rather formal mode of growth and its very upright branches, which are so soft and succulent that sheep and cattle are extremely fond of them.

2. *U. nānus* Forst. (*dwarf F.*); calyx with the pubescence appressed the teeth lanceolate, bractæ minute, wings about the length of the keel. *E. B. t.* 743.

Dry heaths, in many parts of England and Ireland. Dalguise, Perthshire, and Galloway; Scotland. Orkney. *h.* 7—11. — Smaller than the last in all its parts. The essential character consists in the more minute, rounded, close-pressed, and often hardly discernible bractæ, the calyx merely pubescent with more distinct teeth, shorter wings, and the legume indehiscent; at least it may be observed remaining on the plant and still closed the year after it has arrived at maturity. Of this there are two forms: the one, with the wings flat, straight and shorter than the keel; the other usually larger but sometimes even smaller (*U. Gallii* of Planchon), with the wings falcate and incurved, actually a little longer than the keel, but by their curvation appearing scarcely so long in the recent flower, consequently not folded over each other as in the last species; but there seem to be several intermediate states.

## 2. GENISTA Linn. Green-weed.

*Cal.* 2-lipped; upper lip with 2 deep segments entire, lower one with 3 teeth. *Standard* oblong. *Keel* deflexed after flowering. *Legume* flat or turgid, many-seeded. — Leaves simple or trifoliolate. — Named from *Gen*, said by Théis to mean a shrub in Celtic.

1. *G. tinctoria* L. (*Dyer's G.*); unarmed, leaves lanceolate or elliptical nearly glabrous, stipules minute subulate, branches

rounded striated, flowers spicato-racemose, corolla and legumes glabrous. —  $\alpha$ . branches erect. *E. B. t. 44.* —  $\beta$ . stem and branches prostrate.

Pastures, thickets, and borders of fields; frequent in England, rare in Scotland and Ireland. —  $\beta$ . Heaths and rocks near Kynance Cove, Cornwall. *h. 7, 8.* — *Stem* 1—2 ft. high. *Leaves* rather distant, hairy at the edges. *Flowers* pale yellow, almost sessile, with a small floral leaf or *bractea* at the base. — Employed to dye yarn of a yellow colour.

2. *G. pilosa* L. (*hairy G.*); unarmed, procumbent, leaves obovato-lanceolate complicate silky beneath, stipules ovate obtuse, flowers axillary on short pedicels, standard keel and legumes downy. *E. B. t. 208.*

Dry sandy or gravelly heaths, rare. About Bury, Suffolk; in the forest, by the road from Maresfield to Groombridge, Sussex; between Little Malvern and Malvern Wells, Worcestershire; near the Lizard and St. Agnes' Head, Cornwall. *h. 5—9.* — A small, much-branched, tortuose, woody-stemmed plant. *Flowers* small, bright yellow.

3. *G. Anglica* L. (*Needle G.*, or *Petty-Whin*); spinous, spines simple none on the flowering branches, leaves ovato-lanceolate glabrous, stipules obsolete, flowers axillary somewhat racemed, corolla and legumes glabrous. *E. B. t. 132.*

Moist heaths and moory ground, frequent. *h. 5, 6.* — *Stems* declined, very spinous. *Leaves* very small. *Flowers* yellow, solitary in the axils of the upper leaves.

### 3. SAROTHÁMNUS Wimm. Broom.

*Cal.* 2-lipped, without bracteas at its base; upper lip with 2 small teeth, lower one 3-toothed. *Standard* large, broadly ovate. *Keel* very blunt, including the stamens, at length deflexed. Tube of the *stamens* split on the upper side. *Style* very long, thickened upwards, and spirally curved. — *Legume* many-seeded, much longer than the calyx. — *Leaves* simple or trifoliolate. — Named from *σάπων*, to sweep, *Σάπων*, a shrub.

1. *S. scoparius* Wimm. (*common B.*); branches angled glabrous, leaves ternate stalked, upper ones simple, leaflets oblong, flowers axillary shortly pedicellate, legumes hairy at the margin. *Spartium* L.: *E. B. t. 1339.* *Cytisus* DC.

Dry hills and bushy places, frequent. *h. 4—6.* — *Stem* 3—6 ft. or more high. *Branches* long, straight, green. *Flowers* large, bright yellow. — The young green tops are said to be powerfully purgative and diuretic, and they are very bitter. What is called *Irish Broom* is *S. patens*, a native of Spain and Portugal.

### 4. ONÓNIS Linn. Rest-harrow.

*Cal.* campanulate, 5-cleft, its segments linear. *Standard*

large, striated. *Keel* rostrate. *Legume* turgid, sessile, few-seeded.—*Leaves* simple or trifoliate.—Named from *ovos*, an *ass*; because the plant is eaten by that animal.

1. *O. arvensis* L. (*common R.*); shrubby, branches hairy often spinous, lower leaves ternate, the rest simple oblong or oval serrated except at the base, flowers solitary shortly stalked, calyx much shorter than the corolla, legume erect obliquely rhomboid 2—3-seeded, seeds tuberculated. — *α.* procumbent, branches uniformly hairy, calyx longer than the legume and usually shorter than the floral leaves. *E. B. S. t.* 2659. — *β.* erect or ascending, more glabrous, branches with the hairs usually arranged in two rows, calyx rather shorter than the legume and usually longer than the floral leaves. *E. B. t.* 682. *O. Antiquorum* L.

Barren pastures and borders of fields. 4. 6—9. — A very variable plant, erect or procumbent and rooting, more or less spinous; *leaves* ovate or cuneate; *stipules* adhering to the petioles; *flowers* rose-coloured, sometimes white. The *var. β.* is usually more spinous, and with smaller flowers and upper leaves; but it has so much the habit of *α.*, and so many of its characters, that we do not perceive any advantage in separating them, particularly as we have seen forms between the two.

2. *O. reclinata* L. (*small spreading R.*); herbaceous spreading viscid and hairy, leaves all ternate, stipules broadly ovate, peduncles 1-flowered, calyx about as long as the corolla, shorter than the closely reflexed cylindrical legumes which have 14—16 warted seeds. *E. B. S. t.* 2838.

Steep bank, close by the sea, about 3 miles north-west from the Mull of Galloway. Alderney, one of the Channel Islands. ☉. 6, 7. — This little species is principally found in the South of Europe, and could scarcely have found its way to the first of these localities except along with ballast.

### 5. ANTHÝLLIS Linn. Kidney-vetch.

*Cal.* inflated, 5-toothed. *Pet.* nearly equal in length. *Keel* obtuse or shortly pointed. *Legume* oval, 1—3-seeded, enclosed in the permanent calyx.—*Leaves* usually pinnate.—Name: *ανθος*, a *flower*, and *ιουλος* a *beard* or *down*, from the downy calyces.

1. *A. Vulneraria* L. (*common K.*, or *Lady's Fingers*); herbaceous, leaves pinnate, leaflets unequal, heads of flowers in pairs. *E. B. t.* 104.

Dry pastures, frequent. With red and sometimes white or cream-coloured flowers, in Devonshire, Wales and South of Ireland, mostly by the sea. 4. 6—8. — *Stem* ascending. *Leaflets* 5—9, lanceolate, entire, hairy, terminal one the largest. *Flowers* in crowded heads;

*bracteas* large, digitate or palmated; *calyx* hairy, the teeth ovate, pointed.

Tribe II. TRIFOLIEÆ. *Legume* 1-celled. *Stamens* diadelphous. *Stems* herbaceous, rarely shrubby. *Leaves* 3—5-foliolate. (Gen. 6—10.)

# 6. MEDICÁGO Linn. Medick.

*Cal.* with 5 nearly equal teeth. *Keel* obtuse. *Legume* falcate or spirally twisted.—*Leaves* trifoliolate. — Name: the *μηδική* of the Greeks, so called because it was introduced into Greece by the Medes.

1. *M. \*falcata* L. (*yellow Sickle M.*); stem decumbent slightly hairy, leaflets obovate-oblong toothed, peduncles racemed, racemes many-flowered subcorymbose, pedicels usually longer than the bracteas, legume compressed downy falcate or with one spire. *E. B. t.* 1016.

Dry gravelly banks and old walls, chiefly in Norfolk, Suffolk, and Cambridgeshire; rare. *fl.* 6, 7. — *Flowers* usually yellow, sometimes violet. Mr. Babington sends us from Thetford a blue-flowered plant without fruit, under the name of *M. sylvestris* Fr.; but as none of the distinguishing marks between this and the next species are to be depended on, except the fruit, we cannot say to which it ought to be referred.

2. *M. \*sativa* L. (*purple M.*, or *Lucerne*); stem usually erect, leaflets obovate-oblong toothed, peduncles many-flowered racemed, pedicels usually shorter than the bracteas, legumes compressed downy twisted 2—3 times in a loose spire. *E. B. t.* 1749.

Hedges, pastures, and borders of fields, not wild. *fl.* 6, 7. — This has purple, or sometimes yellow *flowers*, and a spirally twisted *pod*, and bears a great resemblance to the preceding, of which it has been suspected to be only a cultivated state. In habit they both vary much, but still differ remarkably from all the following.

3. *M. lupulina* L. (*black M.*, or *Nonsuch*); leaflets obovate-cuneate, stipules nearly entire, peduncles many-flowered, spikes dense oval, legumes compressed unarmed kidney-shaped. *E. B. t.* 971.

Abundant in waste and cultivated grounds. *fl.* 5—8. — A valuable plant in agriculture, very similar in habit to *Trifolium filiforme*. *Stems* procumbent or ascending, in this and all the following. *Flowers* crowded, small, yellow. *Legumes* small, 1-seeded, rugged with longitudinal prominent veins, of a black colour when ripe.

4. *M. maculata* Sibth. (*spotted M.*); leaflets obcordate, stipules toothed, peduncles few-flowered, legumes compactly spiral compressed, the spires furrowed at the edge and fringed with a double row of long spreading curved prickles. *M. polymorpha* *E. B. t.* 1616.



Gravelly pastures in the middle and south of England. Ormeshead, North Wales. ☉. 5—8. — *Leaflets* marked with a purple spot in the centre. *Legume* with only 2—3 spires, the edge thick with 4 ridges and a central furrow.

5. *M. minima* L. (*little Bur-M.*); leaflets obcordate downy, stipules nearly entire, peduncles few-flowered, legumes compactly spiral subglobose, the spires (about 4) narrow keeled at the margin with a compact double row of uncinat prickles. *E. B. S.* t. 2635. —  $\beta$ . stems and leaves hoary.

Sandy fields and waste places, rare. Narburgh, Norfolk; Newmarket, Cambridgeshire; between Sandwich and Pegwell, Kent; Landguard Fort and elsewhere on the coast of Suffolk. —  $\beta$ . Pegwell Bay, Isle of Thanet. ☉. 5—7. — Ray's plant from Orford, Suffolk, supposed by Smith to be *M. muricata* All., is more probably the present species.

6. *M. denticulata* Willd. (*reticulated M.*); nearly glabrous, leaflets obcordate, stipules laciniated, peduncles few-flowered, legumes broad loosely spiral and flat with 2—3 spires deeply reticulated the margin thin keeled with a double compact row of prickles. —  $\alpha$ . prickles subulate often curved or hooked. *E. B. S.* t. 2634. —  $\beta$ . prickles minute straight.

First discovered on the coast of Kent, but since found in several of the Eastern and Southern counties of England. ☉. 4—8. — The legumes are beautifully reticulated, and quite unlike any of the preceding.

## 7. MELILÓTUS Tourn. Melilot.

*Cal.* 5-toothed; teeth nearly equal. *Pet.* distinct, deciduous; *Keel* obtuse. *Legume* 1- or few-seeded, indehiscent, longer than the cal. — Flowers in long racemes. Leaves trifoliolate. — Name: *mel*, honey, and *Lotus*, the genus so called.

1. *M. officinalis* L. (*common yellow M.*): legumes 1—2-seeded ovate compressed pointed irregularly veined and rugose, racemes lax, corolla more than twice as long as the calyx, petals all of nearly equal length, stem erect. *Trifolium Sm.*: *E. B.* t. 1340.

Bushy places and way-sides, not frequent. ♂ or ♀. 6—8. — *Stem* 2—3 ft. high. *Leaves* obovate, serrated. *Flowers* yellow, in unilateral pedunculated axillary racemes. *Legumes* 3—4 times longer than the calyx, nearly twice as large as in the next species, and less prominently wrinkled. — This plant, while drying, smells like *Anthoxanthum odoratum*.

2. *M. \*vulgaris* Willd. (*white M.*); legumes 1—2-seeded ovate obtuse mucronate reticulate-rugose, racemes lax, corolla twice as long as the calyx, keel and wings shorter than the standard, stem erect. *M. leucantha Koch*: *E. B. S.* t. 2689.

In many parts of England and Scotland, but probably introduced with corn or ballast. ♂. 7, 8. — *Flowers* white.

3. *M. arvensis* Wallr. (*Field M.*); legumes 1—2-seeded ovate obtuse mucronate transversely plicate rugose, racemes laxl corolla twice as long as the calyx, wings and standard equal, longer than the keel, stem branched from the base ascending. *E. B. S.* v. 2960.

Near Thetford and Cambridge. ♂. 7, 8. — *Flowers* yellow in British specimens, but sometimes found white abroad. Easily distinguished when in fruit.

#### 8. TRIGONÉLLA Linn. Fenugreek.

*Cal.* 5-toothed; teeth nearly equal. *Pet.* distinct; *Keel* obtuse. *Ovary* many-seeded. *Legume* straight or slightly curved, many-seeded, much longer than the calyx, 2-valved. — *Flowers* in few or many flowered heads, or short racemes. *Leaves* trifoliolate. — Named from τρεῖς, three, and γωνία, an angle, on account of the corolla appearing triangular and tripetalous, most of the species having a minute keel.

1. *T. ornithopodioides* D C. (*Bird's-foot F.*); peduncles about 3-flowered, legumes compressed about 8-seeded nearly twice as long as the calyx, leaflets obcordate toothed at the extremity, stems decumbent. *Trifolium* L.: *E. B. t.* 1047.

Dry sandy pastures, mostly near the sea, not very general. ☉. 6, 7. — *Stems* spreading, 2—5 inches long. *Flowers* small. *Wings* considerably shorter than the *standard* and longer than the *keel*; but the last is longer than the calyx and cannot be called minute in this species: still the distinct petals and long legumes accord better with this genus than with *Trifolium*.

#### 9. TRIFOLIUM Linn. Trefoil. Clover.

*Cal.* 5-toothed; teeth unequal. *Wings* united by their claws to the obtuse *keel*, persistent. *Legume* 1—4-seeded, indehiscent, about as long as the calyx by which it is enclosed. — *Flowers* capitate. *Leaves* trifoliolate. — Named in allusion to its 3 leaves or leaflets.

\* *Flowers* pedicellate (white or reddish), at length deflexed; corolla at length scarious.

1. *T. répens* L. (*white T.*, or *Dutch C.*); heads umbellate globose, legumes with 4 seeds, calyx-teeth unequal, leaflets obcordate serrulate, stems creeping. *E. B. t.* 1769.

Meadows and pastures, frequent. 4. 5—9. — *Peduncles* longer than the leaves. Heads of *flowers* white; each flower is on a foot-stalk which becomes recurved after flowering, and then all the *legumes* are drooping and covered with the withered brown *corollas*. This trefoil is in great repute for pastures. The *leaflets* have often a dark spot at their base, with a white line bordering it near the middle.

(Allied to this is *T. Vaillantii* Poir. and Sm. in Rees's Cycl., *T. elegans* Savi, which has been met with in clover-fields in Surrey, introduced with seed. It has an ascending stem, short petiole, and 2-seeded legume.)

**\*\* Flowers sessile. Calyx not inflated. Standard deciduous or unaltered. Legumes 1- or 2-seeded.**

2. *T. subterrâneum* L. (*subterranean T.*); heads lateral stalked hairy of few flowers, at length deflexed and throwing out from their centre thick fibres palmated at the extremity (abortive calyces) which are closely bent down over the reflexed fruit. *E. B.* t. 1048.

Dry gravelly pastures in England. ☉. 5, 6. — Stem 3—6 or 8 inches long, decumbent, hairy, with large, ovate, membranaceous stipules. *Flowers* long and very slender, almost white. *Peduncles* at length elongated; so that the heads of flowers reach the ground: the young fruit then becomes deflexed, and from the top of the peduncle there arise many thick short fibres with 5 palmated teeth at their extremity, which soon become recurved over the fruit and serve to bury it in the soil. From the number of teeth terminating each of the above-mentioned fibres, as well as from their comparative length and thickness, it is natural to conclude, with De Candolle, that the latter are abortive calyces. *Petals* partially caducous. *Legumes* large, ovate-globose.

3. *T. ochroleucum* L. (*Sulphur-coloured T.*); heads stalked terminal solitary, calyx pubescent, the teeth erect in fruit subulate, lower one much longer than the rest, leaflets elliptic or obovate, those of the lower leaves heart-shaped, stem ascending downy. *E. B.* t. 1224.

Pastures and waysides in England, on gravel or chalk. Frequent also in the clayey soil of Norfolk and Suffolk. 4. 6—8. — A foot or more high. *Petioles* long. *Stipules* subulate, ribbed. *Heads of flowers* large, at first hemispherical, at length oval, cream-coloured. Throat of the calyx with a thickened ring, pubescent within on its upper side. The corolla turns brown and is persistent.

4. *T. pratense* L. (*common purple C.*); heads dense ovate sessile, calyx hairy, its teeth setaceous ciliated, lower one longer than the rest  $\frac{1}{2}$  longer than the tube of the corolla, stipules ovate bristle-pointed, leaflets oval or obcordate, stems ascending. *E. B.* t. 1770.

Meadows and pastures, frequent. 4. 5—9. — *Flowers* reddish-purple. Throat of the calyx with a thick hairy ring, in this and the next. This is the common Clover, so much cultivated for hay. The leaflets are oval obovate or obcordate, often marked with a white lunulate spot.

5. *T. medium* L. (*zigzag T.*); heads lax subglobose stalked solitary terminal, calyx glabrous, the teeth setaceous hairy,

lower one longer than the rest about equal to the tube of the corolla, stipules lanceolate acuminate, leaflets elliptical, stems branched zigzag. *E. B. t. 190.*

Pastures, frequent. 4. 6—9. — *Stem* remarkably zigzag. Heads of flowers larger than the last, deeper purple. *Leaves* spotless. Inferior in quality to *T. pratense*, but better for pasture on light soils.

6. *T. maritimum* Huds. (*Teasel-headed T.*); heads ovate-globose stalked terminal, teeth of the calyx ciliated rigid at first subulate erect, the lower one much longer and larger than the rest shorter than the claws of the petals, all of them in fruit enlarged and spreading, stipules subulate-lanceolate elongated, leaflets oblong-obovate, stem ascending. *E. B. t. 220.*

Salt-marshes on the east coast of England as far north as Norfolk, and south coast, as far as Somersetshire. Newport, Monmouthshire. Near Kilbaric church, Ireland. ☉. 6, 7.

7. *T. \*incarnatum* L. (*crimson C.*); heads ovate at length cylindrical stalked solitary terminal, calyx hairy, the teeth lanceolate-subulate nearly equal shorter than the corolla in fruit spreading, stipules ovate, leaflets obcordate. — *α.* flowers reddish-purple. *E. B. S. t. 2950.* — *β.* flowers yellow.

*α.* Naturalized in a few places in the south of England and Jersey. — *β.* Lizard point, Cornwall, “decidedly indigenous.” *Rev. W. S. Hare.* ☉. 6, 7. — Mouth of the calyx hairy in fruit.

8. *T. \*stellatum* L. (*starry-headed T.*); villous, heads terminal globose stalked, calyx hairy, the teeth longer than the corolla setaceous at length dilated veined and spreading its tube closed with hairs, stipules broadly ovate crenate ribbed, leaflets obcordate, stem short spreading. *E. B. t. 1545.*

Sea-shore, Sussex, between Shoreham harbour and the sea, in great plenty. ☉. 6—8. — A singular and beautiful species, with long calyces, and, at first, straight, setaceous teeth, which conceal the small cream-coloured corolla, and then become greatly enlarged, spreading in a stellated manner.

9. *T. arvense* L. (*Hare's-foot T.*); heads very hairy soft cylindrical terminal stalked, calyx-teeth longer than the corolla permanently setaceous at length somewhat spreading, stipules ovate-acuminate, leaflets lanceolate obtuse, stems erect much branched. *E. B. t. 944.*

Corn-fields and dry pastures, abundant. ☉. 7—8. — *Stem* 6—12 inches high. *Flowers* very minute, almost white. Remarkable for its numerous, subcylindrical, soft, hairy heads or spikes.

10. *T. striatum* L. (*soft knotted T.*); downy, heads terminal and axillary ovate subsolitary sessile, calyx in fruit ventricose striated very rigid hairy with unequal straight small setaceous teeth, leaflets obcordate or obovate nearly entire, stipules ovate cuspidate, stems ascending. *E. B. t. 1843.*

Dry pastures and fields, frequent. ☉. 6, 7. — *Stem* 4—8 or 10 inches long, more or less procumbent or reclined, pubescent. *Leaves* in this and the next with the veins straight and at the margin not thickened. *Flowers* small, purplish-red. *Cal.* deeply furrowed, oval, a little swollen, with 5, almost setaceous, straight, not spreading *teeth*; its throat marked with a thick ring.

11. *T. Boccóni* Savi (*Boccon's T.*); pods terminal and axillary sessile ovate-cylindrical, calyx cylindrical in fruit, the teeth unequal subulate straight, leaflets obovate or oblong-lanceolate toothed glabrous above, stipules oblong with a long subulate point. *E. B. S.* t. 2868.

Dry places in Cornwall, very rare. Cadgwith near Ruan minor; and Cathellian between the Lizard point and Kynance cove. ☉. 7. — *Stem* 2—6 inches high. *Calyx* not ventricose in fruit as in the last, and not spreading as in the next species: its throat hairy within.

12. *T. scabrum* L. (*rough rigid T.*); heads terminal and axillary sessile ovate, calyx in fruit cylindrical, the teeth unequal subulate very rigid 1-nerved, leaflets obcordate serrulate, stipules ovate-cuspidate, stems procumbent. *E. B.* t. 903.

Chalky or dry sandy fields near the sea, on the east coast to Kincardineshire, on the west to Anglesea. ☉. 5—7. — A small spreading plant, with many terminal and axillary, sessile, ovate heads, very rigid in fruit. *Leaflets* with the veins thicker and curved near the margin. Throat of the *calyx* with a thick ring.

13. *T. glomeratum* L. (*smooth round-headed T.*); heads terminal and axillary sessile globose, calyx-teeth ovate very acute leafy veiny at length reflexed, leaflets obcordate toothed, stipules ovate much acuminate, stems procumbent. *E. B.* t. 1063.

Gravelly heaths and pastures in the east and south of England. ☉. 6. — Similar to the last, but with rounder heads, and broader, greener, and more foliaceous and spreading teeth to the *calyx*.

14. *T. suffocatum* L. (*suffocated T.*); heads sessile roundish, petals shorter than the membranaceous faintly striated calyx whose teeth are broadly subulate falcate recurved. *E. B.* t. 1049.

Sandy sea-shores, rare. On the coasts of Norfolk and Suffolk, Anglesea and the south of England. ☉. 6, 7. — *Stems* 3—4 inches long. Remarkable for its dense sessile heads of inconspicuous flowers, and for its thin, delicate, scarcely striated *calyx*. Whole plant glabrous, unless *T. congestum* Guss. be considered a variety.

15. *T. strictum* L. (*upright round-headed T.*); glabrous, heads terminal and axillary stalked globose, calyx at length campanulate with nearly equal subulate spreading teeth, leaflets elliptic lanceolate denticulate, stipules rhomboid pointless denticulate, stems erect. *E. B. S.* t. 2949.

Rocky banks near the sea, rare. Landewednack, and Old Lizard Head, Cornwall. Jersey. ☉. 6, 7. — *Stem* 2—3 inches high in British specimens, often 6—10 inches in foreign ones. *Leaves* glabrous, beautifully striated and toothed, lower ones obovate. *Stipules* large, point'ess, with glandular teeth. *Heads* with a minute membranous cup-shaped involucre at their base; *bractæ* none at the base of the flowers. *Flowers* never truly deflexed as in the foreign *T. parviflorum*, although by the ripening of the fruit, the lower ones sometimes appear so. Throat of the *calyx* in this and the two last quite naked.

\*\*\* *Flowers sessile. Cal. with the upper lip remarkably inflated after flowering and arched above. Standard deciduous.*

16. *T. fragiferum* L. (*Strawberry-headed T.*); heads with a multifid involucre as long as the calyx at the base globose upon long axillary stalks, calyx after flowering inflated membranaceous reticulated downy with the two upper teeth bent down, stem creeping, leaflets obcordate serrated. *E. B. t.* 1050.

Meadows and pastures. ♀. 7, 8. — *Flowers* very small, purplish-red. The *heads of flowers*, nearly globose in flower but completely so in fruit, are then an inch in diameter, and often more or less coloured, so as not unaptly to represent a strawberry. Mouth of the *calyx*, as in the following species, very oblique when enclosing the fruit, from the one half remaining unaltered while the other becomes enlarged and inflated.

17. *T. \* resupinatum* L. (*reversed T.*); heads with a minute involucre at the base hemispherical at length globose on stalks at first only about as long as the petiole, corollas resupinate, calyx after flowering membranaceous reticulated inflated hairy acute, two of the teeth longer patent, leaflets obovate, stem prostrate. *E. B. S. t.* 2789.

Meadows near Bristol, and near the Poole ballast-quay at Ham, Dorset. ☉. 7.

\*\*\* *Flowers usually pedicellate (bright yellow). Standard persistent, deflexed, dry, enveloping the fruit.*

18. *T. procumbens* L. (*Hop T.*); heads broadly oval many-flowered dense, pedicels much shorter than the calyx, standard at length deflexed furrowed, leaves stalked, leaflets obcordate, central one on a longer stalk. *E. B. t.* 945.

Dry pastures and borders of fields, frequent. ☉. 6—8. — Primary or central *stem* erect; lateral ones or branches ascending or procumbent, sometimes wanting. This is well distinguished from the following by its large, dense, hop-like *heads of flowers*, and the *standard* which is striated when old.

19. *T. minus* Rehb. (*lesser yellow T.*); heads of 8—15 close flowers on rigid peduncles, pedicels rarely half the length of the tube of the calyx, upper calyx-teeth about  $\frac{1}{2}$  of the length of

the lower, standard truncate obscurely furrowed much broader than and quite covering the mature legume, lower leaf-stalks much longer than the stipules, leaflets obcordate central one on a longer stalk, stems decumbent hairy. *E. B.* t. 1256.

Dry pastures and road-sides, frequent. ☉. 6, 7. — We entertain as many doubts as ever whether this and the next are essentially distinct, or even if the characters assigned are constant: the pedicels certainly vary considerably in length, being sometimes so short that the flowers may be almost called sessile, sometimes almost as long as the tube of the calyx.

20. *T. filiforme* L. (*slender yellow T.*); heads on capillary peduncles of 2—5 lax racemed flowers, pedicels longer than the tube of the calyx, upper calycine teeth half the length of the lower ones, standard even deeply notched as narrow as and not covering the ripe legume, leaf-stalks scarcely the length of the stipules, leaflets obcordate equally stalked, stem glabrous. *E. B.* t. 1257. *T. micranthum* Vie.

Dry pastures and road-sides, frequent. ☉. 6, 7.

#### 10. *Lótus* Linn. Bird's-foot Trefoil.

*Cal.* 5-toothed; teeth nearly equal. *Keel* ascending, much acuminate. *Legume* cylindrical, somewhat spongy within, and imperfectly many-celled. — Flowers *umbellate*: peduncles bearing a leaf at their apex. Leaves *trifoliolate*. — Name: supposed to be one of the three kinds (the *herbaceous*) of the *λωτος* of the Greeks.

1. *L. corniculatus* L. (*common B.*); heads depressed umbellate 5—10-flowered, peduncles very long, calyx-teeth of the flower-bud straight, the two upper ones always converging, claw of the standard obovate and inflated above, stems decumbent. — *a. vulgaris*; leaves obovate nearly glabrous. — (*a*) everywhere glabrous or nearly so, leaflets thin. *L. corniculatus* L.: *E. B.* t. 2090. — (*b*) leaflets thick fleshy. — *β. villosus*; leaves obovate and as well as the stem and calyx clothed with very long spreading hairs. — *γ. tenuifolius*; leaflets narrow lanceolate or linear-obovate. *L. tenuis* Kit.: *E. B. S.* t. 2615.

*a.* Pastures everywhere, abundant, the second form near the sea. — *β.* rare. Higham, Kent; Budleigh Salterton; Sandgate. — *γ.* not very common. 4. 7, 8. — The two upper calycine teeth converge with a rounded sinus between them: in the next they diverge, forming an acute angle.

2. *L. major* Scop. (*narrow-leaved B.*); heads depressed umbellate 8—12-flowered, peduncles very long, calycine teeth subulate from an angular base always spreading, the two upper ones diverging, claw of the standard linear, leaflets obovate, stems nearly erect tubular. *E. B.* t. 2091.

Sides of ditches and moist bushy places, by no means unfrequent: 4. 7, 8. — The place of growth of this plant, in moister situations than *L. corniculatus*, consequently inducing a greater development of every part, is, in itself, almost sufficient to account for the trifling variations which distinguish it from that well-known species. It is sometimes nearly glabrous, but usually hairy; and a very hairy state has been gathered in Ireland.

3. *L. angustissimus* L. (*slender B.*); villous, heads 1—4-flowered, peduncles scarcely twice as long as the leaves, leaflets ovate-lanceolate, calyx-teeth straight in the bud as long as the tube or longer, stems procumbent, legumes slender. — *α. minor*; heads 1—2-flowered, legumes about 6 times longer than the calyx often 20-seeded. *L. diffusus* E. B. t. 925. — *β. major*; heads 2—1-flowered, legumes shorter and broader about 2—3 times the length of the calyx about 12-seeded. *L. hispidus* Desf.: E. B. S. t. 2823.

South of England, very rare. — *α.* Castle rock at Hastings, Sussex; at Kingsteignton and Bishopsteignton, Devon; Stokes Bay near Gosport, Hants. Strand, near Passage, Ireland. Jersey. — *β.* Cornwall, near the Lizard and Penzance. ☉. 5—8. — *Flowers* much smaller, and aspect very different from any of the preceding. ● The more luxuriant the specimens are, the thicker and shorter is the legume: in this respect our British specimens of the *var. β.* accord better with *L. hirsutus* Desf. as originally described from cultivated plants, than do wild ones from the south of Europe. Sometimes *var. α.* has the *legume* only  $\frac{1}{2}$  a line thick and 12 lines long, and *β.* a line thick and only 6 lines long; but numerous intermediate states may be observed. The characters derived from the relative length of the *calyx-tube* and teeth, the length of the *peduncles*, the beak of the *legumes*, and the shape of the *leaflets* and *stipules*, only apply to British specimens, and are quite insufficient to separate foreign ones of these two varieties.

Tribe III. ASTRAGALÆ. *Legume spuriously and longitudinally 1- or 2-celled, by the inflexion of one of the sutures. Stamens diadelphous (9 and 1). Stems herbaceous, or somewhat shrubby. Leaves pinnate.* (Gen. 11, 12.)

#### 11. OXYTROPIS De Cand. *Oxytropis*.

*Keel* with a narrow point. *Legume* tumid 2-celled (more or less perfectly); *cells* formed by the inflexed margins of the upper suture. — Named from *οξύ*, sharp, and *τροπή*, a *keel*; one of the essential characters of this genus, as distinguishing it from the preceding.

1. *O. Uralensis* DC. (*hairy Mountain O.*); stemless, leaflets densely clothed with silvery hairs, scape erect longer than the leaves with spreading hairs, legumes erect ovate-cylindrical



silky with a recurved point, style persistent. *Astragalus* L.: *E. B. t.* 466. Ox. Halleri *Bunge* (not *Vill.*)

Dry pastures in Scotland, chiefly near the sea. Queensferry; Montrose; Mull of Galloway; Argyle; Ross; Sutherland. 4. 6, 7. — A very beautiful plant, clothed with silky hairs, especially on the young leaves. *Leaflets* 8—12 pairs, on foreign specimens sometimes 20 pairs, with an odd one, ovate, oblong or narrow-lanceolate, acute. *Scape*, when in fr., 4—6 inches high. *Flowers* bright purple, capitate, somewhat spreading. *Legumes* sometimes 2-celled, sometimes only divided to the middle, in the same plant. We cannot distinguish the European from the Siberian plant.

2. *O. campestris* DC. (*yellowish Mountain O.*); stemless, leaflets sprinkled with shining hairs, scape ascending about the same length as the leaves, legumes erect ovate inflated pubescent semibilocular. *Astragalus* L.: *E. B. t.* 2522. *A. sordidus* Willd.

Rocks facing the south, a little to the north of Bradoony, in the Clova Mountains. 4. 7. — *Leaflets* elliptical-lanceolate. *Flowers* capitate, yellowish, tinged with purple. The Scotch plant belongs to the variety or species called *O. sordida*, but we perceive no essential difference between this and *O. campestris*.

## 12. ASTRÁGALUS Linn. Milk-vetch.

*Keel* obtuse. *Legume* 2-celled (more or less perfectly); *cells* formed by the inflexed margins of the lower suture. — *Αστράγαλος*, one of the bones of the heel, is the Greek name for one of the species, in allusion to the knotted root of that individual plant to which it was formerly applied.

1. *A. glycyphýllus* L. (*sweet M.*); stem prostrate, spikes ovate, leaves longer than the peduncles, leaflets oval, stipules ovate-lanceolate free, legumes somewhat triangular linear curved sessile erect glabrous. *E. B. t.* 203.

Woods and thickets, in a gravelly or calcareous soil. Rare in Scotland; about Edinburgh, Queensferry, and Arbroath. 4. 6—9. — Well distinguished by its large size. *Stem* prostrate, 2—3 ft. long. *Leaves* with large ovate acute stipules, which are free from each other and from the petiole. *Flowers* dingy yellow. *Legumes* an inch or more in length, curved.

2. *A. hypoglóttis* L. (*purple Mountain M.*); stem prostrate, leaflets slightly emarginate, stipules united, peduncles longer than the leaves, legumes ovate stipitate erect capitate hairy 2-seeded. *E. B. t.* 274.

Dry gravelly or chalky pastures; chiefly in the east of England and Scotland, as far north as Blair in Athol. 4. 6, 7. — *Stem* weak, a few inches in length. *Leaflets* elliptic-ovate, retuse, hairy. *Stipules* united together, but free from the petiole. *Peduncles* longer than the leaves, curved upwards. *Heads of flowers* large, in proportion to the size of the plant, bluish-purple, sometimes white. *Legumes* ovate, acuminate, hairy, stalked within the calyx.

3. *A. alpinus* L. (*alpine M.*); pubescent, stem ascending, leaflets elliptical, stipules ovate free, legumes elliptical stipitate pendulous racemose clothed with black hairs 2—3-seeded. *E. B. S. t.* 2717. *Phaca astragalina* DC. and others.

Head of Glen Dole, Clova; and Little Craigindal, Braema.. 4.  
7. — *Stem* slender, much and diffusely branched. *Racemes* of few, spreading or drooping *flowers*, white, tipped with purple.

Tribe IV. HEDYSARÆÆ. *Stamens diadelphous* (9 and 1). *Legume separating transversely into one or more 1-seeded joints or cells, but otherwise indehiscent. Leaves pinnate with an odd one without tendrils.* (Gen. 13—16.)

### 13. ORNITHOPUS Linn. Bird's-Foot.

*Cal.* elongated, tubular. *Keel* very small, obtuse. *Legume* compressed, curved, of many close single-seeded joints, whose sides are equal.—*Flowers capitate*; peduncles bearing a leaf at their apex.—Name: *ορνις*, *ορνιθος*, a bird, and *πους*, a foot, from the similarity of the seed-vessel to a bird's foot.

1. *O. perpusillus* L. (*common B.*); leaves pinnate with 6—9 pairs of leaflets and a terminal one, peduncles longer than the leaves, flowers nearly sessile, legumes curved upwards with a beak scarcely longer than the upper joint. *E. B. t.* 369.

Sandy and dry gravelly soil; not unfrequent in Scotland. ☉.  
5—7. — *Stems* 2—6 inches high, much branched at the base and spreading. *Leaflets* oval. *Flowers* white with red lines.

### 14. ARTHROLÓBIUM Desv. Joint-vetch.

*Cal.* elongated, tubular. *Keel* very small, obtuse. *Legume* cylindrical, curved, of many close single-seeded joints, whose sides are equal.—*Flowers capitate*; peduncles naked at the apex.—Name: *αρθρος*, a joint, and *λοφος*, a pod, from the jointed character of the seed-vessel.

1. *A. ebracteatum* DC. (*Sand J.*); stem filiform, peduncle about equal to the leaves 2—4-flowered, stipules very minute, leaves pinnate with many pairs of equal elliptic-oblong leaflets, the lower ones remote from the stem. *E. B. S. t.* 2844.

Sandy ground near Grand Havre, Guernsey, but rare; Alderney; Scilly. ☉. 6—8.

### 15. HIPPOCRÉPIS Linn. Horse-shoe Vetch.

*Cal.* campanulate. *Keel* about as long as the wings, acuminate. *Legume* compressed, submembranaceous, of numerous joints, which are curved like a horse-shoe, so that each legume has many notches on one side.—*Flowers umbellate, axillary and nearly sessile.*—Name: *ἵππος*, a horse, and *κρηπίς*, a shoe, from the form of the notches of the fruit.

1. *H. comosa* L. (*tufted H.*); caespitose, perennial, peduncles longer than the leaves, flowers 5—8 umbellate, legumes curved scabrous with glabrous joints and semicircular notches. *E. B.* t. 31.

Chalky and limestone banks and pastures, plentiful in the chalk counties of England. Near Ayr, Scotland. *Stems* 4—6 inches high, much branched and woody at the base. *Leaflets* 4—6 pairs, with an odd one, obovate-elliptical. *Peduncles* long. *Flowers* pale-yellow, much resembling those of *Lotus corniculatus*; but the *legume* is quite different, and very remarkable: its notches are about twice as broad as deep, whereas, in the foreign *H. glauca*, they are much wider.

#### 16. *ONÓBRYCHIS* Tourn. Saint-foin.

*Keel* truncate, longer than the wings. *Legume* sessile, of one indehiscent joint, compressed, coriaceous, prickly, crested or winged. — *Flowers* racemose. — Named: *ovos*, an *ass*, and *βρυχῶ*, to *bray*; from that animal braying in order to get at it.

1. *O. sativa* Lam. (*common S.*); leaves pinnate nearly glabrous, legumes toothed on the lower margin with elevated wrinkles on the sides, wings of the corolla as short as the calyx, the keel as long as the standard, stem elongated. *Hedysarum Onobrychis* L.: *E. B.* t. 96.

Dry chalky hills and open downs, in various parts of England. *Stems* 4, 6, 7. — A plant cultivated to great advantage in dry, and especially chalky, soils.

Tribe V. *VICIEÆ*. *Stamens* diadelphous (9 and 1). *Legume* 1-celled, 2-valved, several-seeded, the suture not introflexed. *Cotyledons* thick, farinaceous. *Leaves* pinnate, with the common petiole not articulated upon the stem, and ending in a tendril, bristle, or leaflet; sometimes wanting, but with a tendril or leaf-like petiole. (Gen. 17—19.)

#### 17. *VÍCIA* Linn. Vetch. Tare.

*Style* filiform, with its upper part hairy all round, or with a tuft of hair beneath the stigma. — *Leaves* usually with tendrils. — Name originally derived, according to Théis, from *Gwig*, Celtic; whence also *Wicken* in German, *Βικίον* in Greek, *Vesce* in French, and *Vetch* in English.

\* *Peduncles* short, axillary, few-flowered. *Calyx* equal at the base. *Style* with a dense tuft of hairs beneath the stigma. *Cybospermum*.

1. *V. lathyroides* L. (*Spring V.*); flowers sessile solitary, leaflets 2—6 lower ones retuse, stipules entire not impressed

with a spot, calyx-teeth subulate, standard glabrous, legumes linear glabrous, seeds nearly cubical tubercled. *E. B.* t. 30.

Road-sides and dry pastures, not unfrequent. ☉. 4—6. — Much resembling a starved state of *V. sativa*, or especially *V. angustifolia*; from both of which it may be known by its calyx with narrower teeth and not gibbous at the base, the smaller, more purple flower, scarcely so large as the leaflets, with a less reflexed vexillum, and by the rough or dotted seeds. Here, too, the leaflets are fewer on a petiole, the tendrils simple, the stem procumbent.

**\*\* Peduncles short, few-flowered. Calyx gibbous at the base on one side. Style with a dense tuft of hairs beneath the stigma. Evucia.**

2. *V. sativa* L. (common *V.*); flowers 1—2 axillary nearly sessile, leaflets 6—10 lower ones retuse or obcordate upper ones often narrower or linear, stipules toothed with a more or less evident spot, calyx-teeth lanceolate-subulate, standard glabrous, legumes linear pubescent or rarely glabrous, seeds globose smooth.—*a. sativa*; upper leaflets elliptic-oblong, flowers usually in pairs, pods erect. *E. B.* t. 334.—*β. angustifolia*; upper leaflets narrower, flowers usually solitary, pods spreading. *V. angustifolia* Roth: *E. B. S.* t. 2614. *V. Bobartii* Forst.: *E. B. S.* t. 2708.

*a.* Cultivated ground, frequent.—*β.* Dry pastures in a sandy or gravelly soil. ☉ or ♂. 5, 6. — Flowers purple and blue, or red particularly in the small varieties. Hilum of the seed long, linear. Our *var. a.* we have nowhere seen in a perfectly wild state; it is that commonly cultivated. The *β.* has smaller flowers; it is supposed by some to include two species, but by cultivating *V. Bobartii*, we observed it pass into *V. angustifolia*.

3. *V. sépium* L. (*Bush V.*); racemes 4—6-flowered nearly sessile, calyx-teeth unequal, legumes upright glabrous, leaflets 4—8 pairs ovate obtuse gradually smaller upwards upon the petiole. *E. B.* t. 1515.

Woods and shady places, frequent. ♀. 6—8. — Stem 1—2 ft. high. Leaflets large. Standard glabrous. Hilum of seed long, linear.

4. *V. lavigata* Sm. (*smooth-podded V.*); flowers solitary nearly sessile, calyx-teeth nearly equal, standard glabrous, legumes reflexed glabrous, stems ascending, leaflets about 4 pairs bluntish very glabrous, stipules unstained. *E. B.* t. 483.

On the pebbly shore of Weymouth, Dorsetshire; now extinct. ♀. 7, 8. — Allied to the two next in its herbage. This species we do not possess. The above is the only station recorded for it in the whole world, and there it is now lost. It may, therefore, reasonably be conjectured to be a peculiar form of some other species, perhaps a glabrous state of *V. lutea*, which does grow on the shore at Weymouth; but if the segments of the calyx are nearly equal, as may be inferred from the figure in *E. B.* and Smith's description, it would seem rather more allied to *V. sordida* W. et K.

5. *V. lútea* L. (*rough-podded yellow V.*); flowers sessile solitary, calyx-teeth unequal, standard glabrous, legumes reflexed hairy, stems diffuse, leaflets obtuse or acute, stipules coloured upper ones ovate. *E. B. t.* 481.

Rocky or stony ground, especially near the sea. Cornwall, Suffolk. Sussex, Derbyshire. On Glastonbury Tor-hill. Weymouth. Mearns-shire; between Montrose and Arbroath; hills at Queensferry; Dunure Castle, Ayrshire, abundant. *¶.* 6—8. — *Stems* 6—12 inches high, weak. *Leaflets* elliptical-lanceolate, hairy beneath and at the edges, 6—9 pairs on a petiole. *Flowers* large, yellow, *Legumes* compressed. *Seeds* with a short hilum in this and *V. hybrida*. The stipules in this, the last, and the next species, do not seem to differ in form: they are hastate about the middle of the plant, but become ovate upwards by the smallness of the lateral lobes.

6. *V. híbrida* L. (*hairy-flowered yellow V.*); flowers nearly sessile solitary, calyx-teeth unequal spreading, standard hairy, legumes reflexed hairy, stems ascending, leaflets abrupt, stipules unstained upper ones ovate. *E. B. t.* 482.

On Glastonbury Tor-hill. Swan Pool, near Lincoln. *¶.* 6, 7. — *Flowers* yellow, reddish externally.—Similar to the last, but distinguished by its hairy standard.

\*\*\* *Peduncles elongated, few-flowered. Calyx gibbous at the base. Style with a tuft of hairs beneath the stigma. Aracus.*

7. *V. Bithýnica* L. (*rough-podded purple V.*); peduncles rather shorter than the leaves 1- or rarely 2-flowered, legumes upright rough, upper petioles with two pairs of lanceolate leaflets, stipules toothed. *E. B. t.* 1842.

Bushy places in gravelly soil, mostly near the sea, but rare. Southern counties of England; also Essex, Worcester, Gloucester, and Wales. *¶.* 7, 8. — *Flowers* purple, all but the wings, which are whitish. *Leaflets* varying much in breadth, sometimes elliptic-lanceolate, sometimes nearly linear: there is generally but one pair on the lowest petioles.

\*\*\*\* *Peduncles elongated, many-flowered. Calyx gibbous at the base. Cracca.*

8 *V. Cracca* L. (*tufted V.*); peduncles many-flowered longer than the leaves, flowers imbricated, leaflets lanceolate slightly hairy with tendrils, stipules half arrow-shaped nearly entire. *E. B. t.* 1168.

Bushy places. *¶.* 6—8. — *Stem* 2—3 ft. high. *Flowers* numerous, crowded, drooping and imbricated, of a fine bluish-purple. *Style* hairy all round in the upper part; hairs rather longer on the under side below the stigma, but scarcely forming a tuft, as in the true *Vicia*.

9. *V. O'robús* DC. (*Wood bitter V.*); leaves pinnate hairy with 7—10 pairs of ovate-oblong acute leaflets without tendrils,

stipules half arrow-shaped slightly toothed at the base, peduncles many-flowered at length longer than the leaves, stem branched decumbent hairy. *Orobis sylvaticus* L.: *E. B.* t. 518.

Rocky and mountainous woods and thickets in the North. 4 5, 6. — *Flowers* purplish-white in unilateral racemes. *Style* filiform, equally pubescent all round its upper part.

10. *V. sylvatica* L. (*Wood V.*); peduncles many-flowered longer than the leaves, leaflets elliptic-oblong mucronate, stipules lunate deeply toothed at their base, tendrils branched. *E. B.* t. 79.

Bushy places in mountainous countries, in Scotland, the north and north west of England, Wales, and Ireland. It has been found near Newmarket; and in Oxfordshire, and Kent. 4. 6—8. — *Stems* 3—6 ft. high, climbing by means of its branching tendrils. *Leaflets* 6—8 or 10 pairs. *Flowers* very beautiful, numerous, white, streaked with bluish veins. *Style* equally pubescent all round towards the stigma.

\*\*\*\* *Peduncles elongated, few-flowered. Style equally pubescent all round. Calyx equal at the base. Annual plants. Ervum.*

11. *V. tetrasperma* Lois. (*slender T.*); leaflets 3—6 pairs linear obtuse or acute, peduncles 1—7-flowered, legumes oblong-linear glabrous 4—8-seeded. — *α.* leaflets 4—6 pairs oblong linear obtuse mucronate, tendrils usually branched, peduncles pointless or with a soft point as long as the leaves 1—3-flowered, legumes 4—6-seeded. *Ervum* L.: *E. B.* t. 1223. — *β.* leaflets 3—4 pairs narrow linear acute, tendrils simple, peduncles aristate at length about twice as long as the leaves 1—7-flowered, legumes 5—7-seeded. *V. gracilis* Lois.: *E. B. S.* t. 2904. *Ervum DC.*

Corn-fields, hedges, &c. — *α.* not uncommon in England; more rare in Scotland, as at St. David's, Fifeshire; Ruthven, near Perth; Arbroath, and in Lanarkshire and Kirkcudbrightshire. — *β.* Cobham, Kent; Bath; Isle of Wight. County of Kerry, Ireland. ☉. 6—8. — *Stipules* semi-sagittate, entire. Teeth of the *calyx* elongated from a triangular base, shorter than the tube, the two upper ones diverging. Standard of *corolla* in *var. α.* with blue streaks, in *β.* usually without them. *Seeds* globose, with an oblong or oval hilum. The only difference between the two vars. is the larger flowers of *var. β.*, its narrower and fewer leaflets, the latter causing the leaves to be shorter than the fruit-bearing peduncle; but Dr. Bromfield has observed so many intermediate forms, that there is "reason to doubt the propriety of keeping them asunder."

12. *V. hirsuta* Koch (*hairy T.*); leaflets 6—8 pairs linear-oblong truncated, peduncles 1—6-flowered, legumes oblong 2-seeded hairy. *Ervum* L.: *E. B.* t. 970.

Corn-fields and hedges; too frequent. ☉. 6—8. — *Stems* 2—3 ft. long, weak, straggling and climbing. *Stipules* semi-sagittate, the

lower lobe usually cleft into several setaceous segments. *Flowers* very insignificant, pale blue. Teeth of the *calyx* subulate, longer than the tube, the two upper converging. *Seeds* orbicular, slightly compressed, with a long linear *hilum*.

18. *LÁTHYRUS* *Lim.* Vetchling. Everlasting-Pea.

*Cal.* with its mouth oblique, its upper segments shortest. *Style* plane, broader upwards, downy on the upper side.—*Leaves with tendrils, or the petiole without leaflets.*—Name: λαθυρος, a leguminose plant of Theophrastus.

\* *Leaflets wanting.*

1. *L. A'phaca* L. (*yellow V.*); peduncles single-flowered, tendrils without leaves, stipules very large foliaceous cordate-sagittate. *E. B.* t. 1167.

Borders of sandy and gravelly fields, in England, rare. Norfolk, Warwick, and Gloucestershire, and the counties to the south of these. ☉. 5—8. — True leaves, each consisting of a single pair of leaflets, are rare, and only exist on this singular plant in the early germination. *Flowers* yellow.

2. *L. Nissólia* L. (*crimson V. or Grass-Vetch*); leaflets wanting but in place of them a simple linear-lanceolate sessile leaf-like petiole without tendrils, stipules minute subulate. *E. B.* t. 112.

Bushy places, and grassy borders of fields, in England, but scarcely further north than Derbyshire. ☉. 5, 6.

\*\* *Leaflets one pair.*

3. *L. hirsútus* L. (*rough-podded V.*); peduncles 2-flowered, each tendril with a pair of linear-lanceolate leaflets, legumes hairy, seeds tubercular, stem and petiole winged. *E. B.* t. 1255.

Cultivated fields, rare: Essex; between Bath and Bristol. ☉. 6, 7. — *Flowers* pale, except the *standard*, which is bright crimson.

4. *L. praténsis* L. (*Meadow V.*); peduncles 2—8-flowered, tendrils with 2 lanceolate 3-nerved leaflets, stipules arrow-shaped as large as the leaflets, calyx-teeth subulate, stem acutely angled without wings. *E. B.* t. 670.

Moist meadows and pastures, frequent. 4. 7, 8. — *Stems* 2—3 ft. long, climbing. *Flowers* yellow. *Legumes* obliquely veined. *Seeds* globose, smooth, with a small oblong *hilum*. — Cattle are said to be very fond of this common plant.

5. *L. sylvéstris* L. (*narrow-leaved E.*); peduncles 4—5-flowered, tendrils with a pair of sword-shaped leaflets, calyx-teeth triangular-subulate, stem winged. *E. B.* t. 805.

Thickets and hedges, in the middle and south of England. North Wales. Shore near Whitehaven, Kirkcudbrightshire; and banks of

the White Adder, Berwickshire, doubtfully wild. Salisbury Craigs and coast of Angusshire, certainly not indigenous.  $\mathcal{L}$ . 6—8. — *Stem* 5—6 ft. long, broadly winged. *Flowers* large, greenish, with purple veins. *Legumes* marked with reticulated veins. *Seeds* compressed, smooth, with a long *hilum* half surrounding them.

6. *L. \* latifolius* L. (*broad-leaved E.*); peduncles many-flowered, tendrils with 2 ovate-elliptical mucronated leaflets, stipules semi-sagittate broad, stem winged. *E. B.* t. 1108.

Woods, rare, and perhaps always the outcast of gardens. Cambridgeshire, Cumberland, Worcestershire, Bedfordshire, Gloucestershire. Near Kirkeudbright, Scotland.  $\mathcal{L}$ . 7, 8. — A well-known climber, and a great ornament of cottage gardens. Somewhat resembling the last, but with *leaves* much broader, *flowers* larger and more purple, and *seeds* tubercular and wrinkled.

\*\*\* *Leaflets two or more pairs.*

7. *L. palustris* L. (*blue Marsh V.*); peduncles 3—6-flowered, tendrils with 2—4 pairs of linear lanceolate acute leaflets, stipules half arrow-shaped lanceolate, stem winged. *E. B.* t. 169.

Boggy meadows and thickets in several parts of England; near London; in Berkshire, Leicestershire, Derbyshire, Lancashire, Yorkshire, Hampshire, Suffolk, Cambridgeshire, and Norfolk. North and South Wales; Galloway, Scotland.  $\mathcal{L}$ . 6—8. — *Stem* 2—3 ft. high, climbing. *Leaflets* about 2 inches long. *Flowers* bluish-purple.

8. *L. maritimus* Big. (*Sea-side E.*); peduncles many-flowered shorter than the leaves, tendrils with 3—4 pairs of oval leaflets, stipules as large as the leaflets unequally cordato-hastate with the angles acute, stem angled without wings. *Pisum L.* : *E. B.* t. 1046. —  $\alpha$ . compact robust, leaflets obovate-elliptical obtuse, on a recurved common petiole. —  $\beta$ . straggling, slender, leaflets elliptical-lanceolate acute, common petiole straight.

Pebbly beach of Lincolnshire, Suffolk, and the south coast of England. Kerry, Ireland. —  $\beta$ . Burraforth, Unst, Shetland.  $\mathcal{L}$ . 7, 8. — The *style* of this plant is as in *Lathyrus*, to which Bigelow has removed it. The *var. \beta*., brought by Dr. M'Nab from Shetland in 1837, in its slender straggling habit and narrow leaves comes very near the *L. Altaicus* Ledeb., but that has much smaller stipules and cylindrical legumes. The same state is found in Iceland and Arctic America.

## 19. O'ROBUS Linn. Bitter-vetch.

*Cal.* obtuse at the base, oblique at the mouth, its upper segments deeper and shorter. *Style* linear, downy above.—*Leaves* pinnate, without tendrils.—*Name*:  $\sigma\pi\alpha$ , to *strengthen* or *invigorate*, and  $\beta\omicron\upsilon\varsigma$ , an *ox*, because yielding food for cattle; or rather originally from the Celtic *erw* or *ar*, a *ploughed field*; whence come *Arvum*, *Ervum*, *herba*, and many other words in Latin and Greek.



1. *O. tuberosus* L. (*tuberous B.*) ; leaflets 2—4 pairs glaucous beneath, stipules half arrow-shaped toothed at the base, stem simple erect, winged. *E. B. t.* 1153. —  $\beta$ . leaflets linear. *O. tenuifolius Roth.*

Mountain-thickets, frequent. —  $\beta$ . Kinnaird ; and Moy Woods, Inverness-shire. Near Elgin. Devon, Cornwall, and New Forest, Hants. Ashdown Forest, Sussex.  $\mathcal{L}$ . 5—7. — *Roots* tuberous, eaten by the Highlanders, under the name of *Cuirneil* (supposed to be the *chara* of Cæsar, *Bell. Civ.* iii. 48.), a very small quantity being said to allay or prevent hunger. *Stem* 1 ft. high. *Flowers* in long-stalked axillary racemes, purple, veined. *Legume* long, pendulous, cylindrical, black.

2. *O. niger* L. (*black B.*) ; leaflets 3—6 pairs ovate or elliptical, stipules linear-lanceolate acute, stem branched angular erect. *E. B. S. t.* 2788.

Shaded rocks, Scotland. Den of Airly, Forfarshire. Craiganain, a rock within 2 miles of Moy House, Inverness-shire.  $\mathcal{L}$ . 6, 7. — Turns black when drying. *Stem* not winged.

## ORD. XXVII. ROSACEÆ.

*Calyx* 4—5-lobed, free or adherent with the ovary. *Petals* 5, perigynous, equal. *Stamens* perigynous, definite or indefinite, with an incurved aestivation ; *anthers* 2-celled, bursting longitudinally. *Carpels* many, rarely solitary, and then situated between two of the lobes of the calyx (when these are 5), 1-celled, 1—2 or more seeded, free, or combined with each other and with the calyx. *Styles* simple, often lateral, distinct or combined. *Seeds* ascending or suspended, nearly without *albumen* : *embryo* straight, with fleshy or foliaceous *cotyledons*. — Herbs, or Shrubs, or Trees. Leaves *alternate*, with stipules one on each side the base of the petiole. — The pulpy fleshy fruits are esculent ; while the plants which produce them are often poisonous from the presence of Prussic acid, with which many of the species abound. Laurel-water is extracted, not from a true Laurel, but from an individual of this Natural Order, *Prunus Lauro-Cerasus* : the Bitter-Almond owes its flavour to that acid. Some produce a gum ; others are astringent. Roots of *Tormentil* yield a dye ; others are febrifuges. The qualities residing in the species of this Order entitle it to a high rank among British Vegetables.

Sub-Ord. I. AMYGDALÆÆ. *Carpel* solitary, superior. *Style* 1. *Calyx-tube* deciduous. *Stipules* free.

### 1. PRUNUS.

Sub-Ord. II. ROSEÆ. *Carpels* not adhering to the calyx-tube. *Stipules* united to the petiole.

Tribe 1. SPIRÆIDÆ. *Petals* several. *Fruit* a ring of follicles not inclosed within the calyx-tube.

### 2. SPIRÆA.

Tribe 2. POTENTILLIDÆ. *Calyx-tube short and nearly flat, not enclosing the fruit. Petals several. Achenes or drupes 5 or more upon a common flat or convex receptacle.*

\* *Achenes tipped with a long awn (the permanent style).*

3. DRYAS. Awns feathery, not jointed. Receptacle flat.
4. GEUM. Awns jointed. Receptacle elongated.

\*\* *Achenes or drupes with a short style.*

5. RUBUS. Drupes. Calyx simple (without external bracteoles).
6. FRAGARIA. Achenes on a large fleshy deciduous receptacle. Calyx double (with as many external bracteoles at its summit as divisions, and alternate with them).
7. COMARUM. Achenes on a spongy permanent receptacle. Calyx double. Petals smaller than the calyx.
8. POTENTILLA. Achenes numerous, on a dry flat receptacle. Calyx double.
9. SIBBALDIA. Achenes 5—10, on a minute dry receptacle. Calyx double.

Tribe 3. SANGUISORBIIDÆ. *Achenes 1—2, enclosed within the dry calyx-tube.*

10. ALCHEMILLA. Petals 0. Calyx double (8-cleft). Stamens 1—4.
11. SANGUISORBA. Petals 0. Calyx single (4-cleft), with 2—3 external bracteoles at its base. Stamens 4. Stigma capitate.
12. POTERIUM. Petals 0. Calyx single (4-cleft). Flowers usually monœcious. Stamens many. Stigma tufted.
13. AGRIMONIA. Petals 5. Calyx single (5-cleft), without external bracteoles.

Tribe 4. ROSIDÆ. *Petals 5. Achenes numerous, enclosed within the fleshy calyx-tube, which is contracted at the orifice.*

14. ROSA.

Sub-Ord. III. POMEÆ. *Petals several. Carpels united and adhering by their back to the calyx-tube, thus resembling an inferior fruit. Stipules free.*

15. MESPILUS. Calyx-segments large, foliaceous. Petals large, roundish.
16. CRATÆGUS. Calyx-segments small. Petals large, roundish. Cells of fruit bony.
17. COTONEASTER. Calyx-segments small. Petals small, erect.
18. PYRUS. Calyx-segments small. Petals large, roundish. Cells of fruit cartilaginous.

SUB-ORD. I. AMYGDALÆÆ. *Cal. inferior, deciduous. Ovary solitary, superior. Style 1, terminal. Fruit a solitary drupe, with one or two seeds suspended from the top of their cell. Trees or shrubs with simple leaves and stipules free from the petiole. All the parts abound in Prussic acid. (Gen. 1.)*

1. PRÚNUS Linn. Plum and Cherry.

*Cal. 5-cleft. Per. 5. Nut of the drupe smooth, or furrowed at the margin. — Named προυνή in Greek, according to Theophrastus.*

\* *Fruit covered with bloom. Young leaves convolute. PRUNUS DC.*

1. *P. communis* Huds. (common *P.*); peduncles solitary or in pairs, leaves elliptic or ovate-lanceolate somewhat downy beneath especially when young. — *α. spinosa*; peduncles glabrous, leaves at length glabrous, branches spinous. *P. spinosa* L.: *E. B. t.* 842. — *β. insititia*; peduncles and under-side of the leaves pubescent, branches slightly spinous. *P. insititia* L.: *E. B. t.* 841. — *γ. domestica*; peduncles glabrous, leaves at length glabrous beneath except sometimes the midrib, branches unarmed. *P. domestica* L.: *E. B. t.* 1783.

Hedges, coppices, and woods. — *γ.* perhaps truly wild at Twineham, Sussex; and Isle of Wight. *h.* 4, 5. — Hudson and Smith were of opinion that *var. β.* and *γ.* are forms of the same plant, and we are satisfied that the first of these cannot be satisfactorily distinguished from *P. spinosa*. Dr. Bromfield also observes that in Hampshire *P. spinosa* is linked to the other two "by such imperceptible and evanescent degrees of affinity, as to defy any specific formula that can be framed to distinguish them." *P. spinosa* has in general much more spinous and crooked branches, and smaller leaves; and the flowers are usually solitary and past before the leaves appear. *P. insititia* has often scarcely any spine, and then can only be distinguished by the rather more pubescent leaves. In *α.*, or the *Sloe*, the fruit is small, globose and very austere; in *β.*, or the *Bullace-tree*, it is larger; and in *γ.* it is often longer than broad.

\*\* *Fruit without bloom. Young leaves conduplicate. CERASUS DC.*

2. *P. Pádus* L. (*Bird-Cherry*); flowers in pendulous racemes, leaves deciduous obovate or oval glabrous with two glands at the summit of the foot-stalk. *E. B. t.* 1383.

Woods and coppices, frequent, especially in the North. *h.* 5. — A small tree, with acute, doubly serrated leaves. Flowers white. Drupes small, black; nut rugose.

3. *P. A'vium* L. (*wild C. or Gean*); flowers in nearly sessile lax umbels, calyx-tube pyriform, the segments entire somewhat pointed, leaves drooping ovate-lanceolate. *P. Cerasus* Sm. in *E. B. t.* 706.

Woods and hedges. *h.* 5. — A tree. Flower-buds not leafy. The stone of the drupe adheres to the flesh in this species; in the next it separates readily. — The origin of the common garden *Cherry*.

4. *P. Cérasus* L. (*Morello C.*); flowers in nearly sessile umbels, calyx-tube turbinate the segments crenate-serrated blunt, leaves not drooping oblong-obovate or broadly ovate-lanceolate. *E. B. S. t.* 2863. *P. austera* Ehrh.

Woods and hedges, in various places in England. *h.* 5. — A bushy plant, 6—8 ft. high, throwing out underground shoots or stems resembling creeping roots, to a considerable distance. Leaves erect or horizontal, never drooping, "possessing a firmness and opacity quite

wanting in the foliage of the last species." *Bromf.* Inner scales of the flower-buds leafy. — This is the origin of the Morello cherry, but whether truly distinct from the preceding is still to us doubtful as it ever was. Assuredly in cultivation several of the differences usually assigned disappear, such as the pubescence of the leaf; and as to the leafy nature of the flower-buds, unless the upper figure in *E. B.* t. 706 be also taken from the present species, it seems much alike in both.

SUB-ORD. II. ROSEÆ. *Calyx inferior, more or less permanent. Carpels free from the calyx-tube or merely seated upon it. Stipules adhering to the petiole.* (Gen. 2—14.)

Tribe I. SPIRÆIDÆ. *Petals 5. Follicles several, distinct or united, invested by the calyx. Seeds 1—6, suspended from the inner edges of the follicle. Shrubs or herbaceous plants.* (Gen. 2.)

2. SPIRÆ'A *Lin.* Spiræa, Dropwort, or Meadow-sweet.

*Cal.* inferior, equally 5-cleft, persistent. *Pet.* 5, roundish. *Follicles* 3—12, usually distinct, 1-celled, 2-valved, with few seeds. — Name: supposed to be the σπειρα of Theophrastus.

1. *S. \*salicifolia* L. (*Willow-leaved S.*); shrubby, leaves elliptic-lanceolate unequally serrated glabrous, racemes terminal compound. *E. B.* t. 1468.

Moist woods in several parts of the north of England and Scotland. *h.* 7. — A small branching shrub. *Flowers* rose-coloured, in crowded racemes. *Stamens* longer than the petals.

2. *S. Filipendula* L. (*common D.*); herbaceous, leaves interruptedly pinnated, all the leaflets uniform deeply cut and serrated, flowers paniculate-cymose, follicles hairy. *E. B.* t. 284.

Dry pastures, especially in a chalky or gravelly soil; rare in Scotland. *h.* 6, 7. — *Root* with rather long tubers. *Stem* a foot high, panicled above. *Leaflets* small, oblong or lanceolate, alternate ones not half their size. *Stipules* of the rad. leaves linear, entire, of the stem rounded and cut or serrated. *Flowers* yellowish-white, tipped with rose-colour.

3. *S. Ulmaria* L. (*Meadow-sweet*); herbaceous, leaves interruptedly pinnated serrated downy beneath, lateral leaflets undivided terminal one largest and lobed, flowers in compound (and as it were proliferous) cymes, follicles glabrous. *E. B.* t. 960.

Meadows, and banks of ponds and ditches, frequent. *h.* 6—8. — *Stems* 3—4 ft. high, branched upward. *Leaflets* ovate, acuminate, very large, especially the terminal 3—5-lobed one; alternate ones minute. *Flowers* yellowish-white, numerous, sweet-scented. *Fruit* twisted.

Tribe II. POTENTILLIDÆ. *Fruit a collection of achenes or little drupes, upon a common flat or elevated receptacle. Calyx 4—5-cleft, frequently with little bracts near the summit alternating with the segments (or 8—10-cleft, the segments alternately smaller); the tube short nearly flat and not encircling the fruit. Petals usually 4—5. Mostly herbaceous plants, sometimes shrubs. Leaves usually compound. (Gen. 3—11.)*

### 3. DRÝAS Linn. Dryas.

*Cal.* 8—10-cleft, its segments equal. *Pet.* 5—8. Achenes with long feathery not jointed awns. *Receptacle* flat. — Name: *δρυς*, the oak, from a distant similarity between their leaves.

1. *D. octopétala* L. (*white D., Mountain-Avens*); petals 8, leaves obtuse simple crenate-serrated. — *E. B.* t. 451. *D. depressa* Bab. in *Ann. Nat. Hist.* x. t. 7.

Frequent in alpine parts of England, Scotland, and Ireland, especially on limestone; north coast of Sutherland, abundant. *Æ.* 6, 7. — *Stem* short, procumbent. *Leaves* ovate-elliptical, white and downy beneath, petioled. *Flowers* large, white. In a form found in the county of Clare, Ireland, the *calyx* is clothed with nearly black hairs.

### 4. GRÛM Linn. Avens.

*Cal.* 10-cleft, alternate segments minute. *Pet.* 5. *Pericarps* with long geniculated awns. *Receptacle* elongated. — Named from *γεῦω*, to yield an agreeable flavour. The roots of *G. urbanum* are aromatic.

1. *G. urbánum* L. (*common A.*); flowers erect, heads of fruit sessile, upper joint of the awn glabrous and much shorter than the lower one, cauline leaves ternate, radical ones interruptedly pinnate and lyrate. *E. B.* t. 1400.

Woods and hedges, frequent. *Æ.* 6—8. — 1—2 ft. high. *Root-leaves* on long foot-stalks. *Stipules* large, rounded, lobed and cut. *Flowers* small, yellow. *Calyx* and obovate *petals* patent.

2. *G. rivále* L. (*Water A.*); flowers drooping, heads of fruit stalked, upper joint of the awn feathery about as long as the lower one, cauline leaves ternate, radical ones interruptedly pinnate and lyrate. *E. B.* t. 106.

Marshes and wet moory grounds, frequent; sometimes very alpine. *Æ.* 5—7. — A shorter, but stouter plant than the last. *Flowers* much larger, with erect purplish *calyces* and erect dull purplish-orange-coloured *petals*, broadly obovate, clawed. *Stipules* small, ovate and toothed. There is a not uncommon plant, the *G. intermedium* Ehrh., which some call a species, but to us seems a hybrid between these two: in it the *flowers* are sometimes erect, sometimes drooping, *petals* roundish and clawed, *calyx* and *corolla* intermediate as to position and colour, heads of *fruit* usually sessile with the upper joint

of the awn hairy, but shorter than the lower one, and the *stipules* round and toothed; but it varies in these respects, sometimes resembling the one parent more than the other.

### 5. RÚBUS Linn. Bramble. Raspberry.

*Cal.* 5-cleft. *Pet.* 5. *Fruit* superior, of several single-seeded juicy *drupes*, placed upon a protuberant spongy *receptacle*. — Name from the Celtic *reub*, to *tear* or *lacerate*, on account of the prickly stems of the true Brambles.

\* *Leaves* pinnate (or ternate). *Stem* nearly erect, biennial, woody.

1. *R. idæus* L. (common *R.*); leaves pinnate with 5 or 3 leaflets with close white down underneath, foot-stalks channelled, stems nearly erect downy prickly not rooting, flowers drooping, petals as short as the calyx. *E. B.* t. 2442.

Woods, especially in the north. . 6, 7. — *Stems* of two kinds: one is upright, which the first year produces only leaves, but in the second bears fruit and dies; the other is sarmentose and quite below ground, bearing no leaves, and roots at the extremity, thus forming new plants. *Leaflets* somewhat cut and serrated. *Fruit* scarlet in a wild state.

\*\* *Leaflets* 5, digitate or pedate, or ternate, rarely pinnate. *Stem*<sup>1</sup> (mostly) biennial, woody.

2. (1) *R. suberectus* And. (upright *B.*); stem nearly erect not rooting nearly glabrous, prickles uniform chiefly confined to the angles without setæ, leaflets quinate or sometimes pinnate without close white down underneath. *E. B.* t. 2572. *R. plicatus* W. et N.: *E. B. S.* t. 2714.

Thickets, hedges, and boggy places. *h.* 6—8.

2. (2) *R. fruticosus* L. (common *B.*); stem arched rooting angular furrowed nearly glabrous, prickles confined to the angles of the stem uniform without setæ, leaflets quinate with close white down underneath. *E. B.* t. 715.

Thickets and hedges. *h.* 7, 8.

2. (3) *R. rhamnifolius* W. et N. (*Buckthorn-leaved B.*); stem arched rooting nearly glabrous, prickles confined to the angles of the stem uniform without setæ, leaflets quinate paler underneath but not with close white down. *E. B. S.* t. 2604.

Hedges, thickets, and woods. *h.* 7, 8.

<sup>1</sup> By *stem* is meant the barren root-shoot; and the prickles and leaves, when not otherwise mentioned, are those upon that shoot. Both here and in the genus *Rosa*, *setæ* are hairs or bristles that are glandular at the apex; *acicule* are straight rigid hairs without glands, or slender prickles: in some species a gradual transition may be observed from the one extreme to the other, thus reducing the value of any character obtained from them. The form, texture, incision, petiolation, and overlapping of the leaflets and the form of the inflorescence are in our opinion too variable to be used for distinguishing the species. All the true Brambles are, if we mistake not, destitute of the underground sarmentose stems of the Raspberries.

2. (4) *R. carpinifolius* W. et N. (*Hornbeam-leaved B.*); stem arched or prostrate rooting hairy, prickles confined to the angles of the stem uniform without setæ, leaflets quinate or ternate without close white down underneath. *E. B. S.* t. 2664. *R. leucostachys* Sm.: *E. B. S.* t. 2631. *R. macrophyllus* W. et N.: *E. B. S.* t. 2625.

Hedges, thickets, and woods. *h.* 7, 8. — This and the last appear to be merely the two extremes of the same form, between which there are, it is to be feared, many intermediate states.

2. (5) *R. corylifolius* Sm. (*Hazel-leaved B.*); stem arched rooting nearly glabrous, prickles scattered nearly equal without aciculæ or glandular hairs or setæ, leaflets quinate or ternate without close white down underneath. *E. B. t.* 827.

Hedges and thickets. *h.* 7, 8. — Scarcely distinct from the two preceding.

2. (6) *R. glandulosus* Bell. (*glandular B.*); stem arched or decumbent rooting hairy not glaucous, prickles scattered unequal with copious aciculæ or setæ, leaflets quinate or ternate without close white down underneath, calyx erect patent or reflexed in fruit. *E. B. S.* t. 2883. *R. Köchleri* W. et N.: *E. B. S.* t. 2605.

Woods, thickets, and hedges. *h.* 7, 8.

2. (7) *R. cæsius* L. (*Dewberry*); stem prostrate or arched rooting more or less glaucous, prickles scattered unequal with (sometimes very few) setæ, leaflets ternate or quinate without close white down underneath, calyx closely clasping the fruit. *E. B. t.* 826.

Thickets, hedge-banks, and borders of fields. *h.* 6, 7. — The two last are probably extremes of the same thing; but if distinct, we would refer the plants with stems copiously covered with aciculæ or setæ to the former, although the calyx almost clasps the fruit; and to the latter those with few aciculæ and setæ but with a calyx clasping the fruit, although the stem be scarcely glaucous.<sup>1</sup>

\* <sup>1</sup> We are almost quite convinced — *practically*, not only because the characters taken from the young shoots, and disappearing when they are older and begin to blossom, are not permanent, but because none of the reputed species of the shrubby Brambles are either anatomically or physiologically distinct, all passing into each other without any fixed assignable limit — and *theoretically*, from a consideration of what is requisite to constitute a difference between the other European species of *Rubus*, that all of the present section are mere varieties approaching on the one side to *R. idæus*, on the other to *R. saxatilis*, with both of which many fertile and permanent hybrids may have been formed, and are still forming. We have however presented above (though without any attempt to give synonyms, except a reference to *E. Bot.*), what we consider the more prominent forms or races, numbering them as if only constituting a single species, and have indicated how those ought perhaps to be reduced to *four* types. We are aware that this is not in conformity with the principles adopted in other modern Manuals of the British Flora; and we regret that our limited space prevents our adding here the species with characters, according to the views taken by Weihe and Nees, in Germany, and by Babington, Leighton, Lees, and, above all, Dr. Thomas Bell Salter, in this country.

\*\*\* *Leaflets ternate. Stem herbaceous or nearly so.*

3. *R. saxatilis* L. (*Stone B.*); stems slender rooting herbaceous nearly unarmed, flower-shoots erect with a panicle of few flowers, leaflets ternate, slightly downy. *E. B. t.* 2233.

Stony mountainous places, especially in the North. *¶.* 6—8. — Rooting stems or runners annual; erect ones slender, 8—10 inches high, with a few weak prickles. *Leaflets* sometimes only 2, ovate. *Petals* minute, narrow, greenish yellow. *Fruit* of very few (1—4), red, (comparatively) large *drupes*.

4. *R. \*arcticus* L. (*arctic R.*); stems erect not rooting unarmed bearing (mostly) one flower, petals roundish notched, leaflets ternate glabrous obtusely serrated. *E. B. t.* 1585.

Mountain turfy bogs. Isle of Mull, and Ben-ghlo in Athole. *¶.* 6. — The only place in Scotland which agrees with the foreign localities of this plant is in the low moors near the station of *Menziesia cærulea*; where stood the old Caledonian forest: there only need it to be looked for; the two spots above given we have searched in vain for it. *Stems* 4—6 inches high, slender, having 3—4 *leaves*, with creeping *roots* or underground leafless rooting stems. *Flowers* of a deep rose-colour, large for the size of the plant. *Fruit* purplish red, highly prized by the Swedes.

\*\*\*\* *Leaves simple.*

5. *R. Chamæmorus* L. (*Mountain R., or Cloudberry*); diœcious, stem herbaceous erect unarmed one-flowered, leaves lobed and plaited. *E. B. t.* 716.

Alpine turfy bogs; North of England, Wales, Scotland, and Ireland. *¶.* 6, 7. — Erect, 8—10 inches high, creeping as in the last species and in *R. idæus*. *Flowers* large, white. *Fruit* large, orange-red, of an agreeable flavour.

## 6. FRAGÁRIA Linn. Strawberry.

*Cal.* 10-cleft, segments alternately smaller. *Pet.* 5. *Stam.* many. *Achenes* many, minute, tipped with a short *style*, placed upon a large fleshy deciduous *receptacle*. — Named from *fragrans*, *odorous*; on account of its fragrant smell.

1. *F. véscæ* L. (*Wood S.*); calyx of the fruit spreading or reflexed, hairs of the peduncles widely spreading, those of the pedicels erect or close-pressed silky. *E. B. t.* 1524, and *S. t.* 2742.

Woods and thickets, frequent. *¶.* 5—7.

2. *F. \*elátior* Ehrh. (*Hautboy S.*); calyx of the fruit spreading or reflexed, hairs of the peduncles and pedicels widely spreading somewhat deflexed. *E. B. t.* 2197.

Groves and hedges, in several places in England, where it has



escaped from cultivation. 2. 6—9. — The plants which bear perfect stamens never produce fruit; but it is doubtful whether it ought to be called imperfectly monœcious or diœcious: most probably the latter.

### 7. *CÓMARUM* Linn. Marsh Cinque-foil.

*Cal.* 10- (or more)- cleft, segments alternately smaller. *Pet.* 5 (or more) shorter than the calyx. *Achenes* many, minute, tipped with a minute style, inserted on a large spongy permanent *receptacle*. — Named from *κομαρος*, a term applied by Theophrastus to some plants of the *Arbutus* tribe.

1. *C. palústre* L. (*purple M.*). *E. B.* t. 172. *Potentilla Comarum* Nestl.

Marshes and peat-bogs, frequent. 2. 5—7. — *Stems* ascending. *Leaves* petioled, with 7 lanceolate deeply serrated *leaflets*, upper ones quinate or ternate, sessile with a pair of ovate *stipules*. *Flower-stalk* branched. *Flowers* of a deep dingy purple.

### 8. *POTENTILLA* Linn. Cinque-foil.

*Cal.* 8—10-cleft, segments alternately smaller. *Pet.* 4—5. *Achenes* numerous, minute, tipped with a minute style placed upon a small dry flat *receptacle*. — Named from *potens*, *powerful*, from the medicinal properties attributed to some of the species.

\* *Leaves pinnate. Flowers yellow.*

1. *P. fruticósa* L. (*shrubby C.*); leaves pinnate, leaflets (generally 5) oblong-lanceolate entire, stem shrubby. *E. B.* t. 88.

Rocky and bushy places, rare. Wastdale Screes, Cumberland. Teesdale, Durham, and Yorkshire. By the river Don, near Doncaster. Rock-forest, Clare, Ireland. 2. 6, 7. — Hairs on the *receptacle* elongated.

2. *P. anserína* L. (*Silver-weed*); leaves interruptedly pinnate serrated silky especially beneath, peduncles axillary single-flowered, stem creeping. *E. B.* t. 861.

Moist meadows and road-sides, frequent. 2. 6, 7. — Varying much in the degree of silkiness; sometimes silky and white on both sides. *Flowers* large. Hairs on the *receptacle* in this and the next shorter than the glabrous *achenes*. *Leaflets* lanceolate.

\*\* *Leaves pinnate. Flowers white.*

3. *P. rupéstris* L. (*Strawberry-flowered C.*); stem erect dichotomous, leaves pinnate, leaflets cuneate-ovate serrated hairy, of the root-leaves 5, of the cauline 3. *E. B.* t. 2058.

Very rare, on Craig Breidhin, Montgomeryshire. 2. 5, 6. — *Flowers* large. *Achenes* even, glabrous.

\*\*\* *Leaves digitate. Flowers yellow. (Hairs on the receptacle shorter than the glabrous achenes.)*

4. *P. argentea* L. (*hoary C.*); leaves quinate, leaflets cuneiform cut white and downy beneath, their margins revolute, stem decumbent or ascending. *E. B.* t. 89.

Pastures and road-sides, especially in a gravelly soil. *Æ.* 6, 7. — *Flowers* terminal, small, subcorymbose.

5. *P. verna* L. (*Spring C.*); leaflets of root-leaves 5—7 obovate green on both sides sharply-toothed upwards hairy on the ribs beneath and at the edge, lower stipules linear acute, petals obcordate longer than the calyx, stem prostrate. *F. B.* t. 37.

Dry pastures, especially in hilly countries. *Æ.* 4—6. — A small, woody, procumbent plant, 3—5 inches in length. *Flowers* at the end of weak leafy branches.

6. *P. alpestris* Hal. fil. (*orange alpine C.*); radical leaves of 5 wedge-shaped somewhat hairy leaflets deeply cut in the upper half, stipules obtuse, upper ones ovate, lower ones lanceolate, petals heart-shaped, stem ascending. *P. aurca E. B.* t. 561 (not *L.*).

Mountains of the north of England. Wales. Breadalbane and Clova mountains of Scotland. *Æ.* 6, 7. — We have endeavoured, but in vain, to detect some certain character by which this might be distinguished from *P. verna*; the extreme *vars.*, it is true, do appear distinct, but they insensibly pass into each other. In general, however, the terminal tooth of the leaflets is prominent, giving them a rounded form at the apex, while in *P. verna* it is shorter than the others, causing the leaflets to appear truncate or marginate. If retained as a species, surely the name *Salisburyensis*, given to it by Jacquin, should be preferred to the much more recent one of the younger Haller.

7. *P. \*opaca* L. (*Saw-leaved hairy C.*); radical leaves of 7 hairy linear wedge-shaped leaflets deeply serrated throughout, stem-leaves ternate mostly opposite, stems ascending, petals about as long as the calyx obcordate-cuneate. *E. B.* t. 2449. *P. intermedia, Nest. Pot.* t. 8.

Received from Scotland (perhaps from a garden) by the late *Mr. Donn* of Cambridge. Hills of Clova; Braes of Balquidder; and rocks by the sea-shore opposite to Dundee: *G. Don*; but found by no one else. *Æ.* 6. — We have specimens of this, said by *Mr. G. Don* to have been found wild by him, and others from his garden at Forfar. The leaflets are coarsely serrated to the base, and in this respect, as well as in its stouter habit, it differs from the two preceding species. All botanists are not quite agreed that *P. opaca* L. and *P. intermedia* Nestl. (or *P. opaca* Jacq.) are the same; the former, from Linnæus saying that the stem is filiform and confounding it with *P. verna*, is not the supposed Scotch plant, if the two be distinct; it has petals longer than the calyx, while they are of the same

length in *P. intermedia*. But to us it is very doubtful if the last be not the luxuriant or cultivated form of the other.

8. *P. réptans* L. (*common creeping C.*); stem filiform prostrate creeping, leaves long-stalked, leaflets 5 obovate-cuneiform serrated, peduncles axillary solitary single-flowered longer than the leaf, achenes granulated scabrous. *E. B.* t. 862.

Meadows, pastures, and way-sides. 4. 6—9. — *Stems* taking root at the joints. *Flowers* yellow.

9. *P. Tormentilla* Sibth. (*Tormentil*); stem-leaves ternate those at the base of the peduncles sessile, leaflets lanceolate or obovate-cuneiform inciso-serrate, stem procumbent or ascending dichotomous upwards, achenes wrinkled. — *α.* leaves all sessile acute except those of the root, stem ascending. *Tormentilla officinalis* L.: *E. B.* t. 863. — *β.* lower stem-leaves stalked obtuse, stem prostrate sometimes rooting, flowers larger. *Tormentilla reptans* L.: *E. B.* t. 864.

Moors and heathy places, frequent. — *β.* Hedge-banks, borders of fields and waste places. 4. 6—8. — To one or other of these *vars.* obviously belongs *P. mixta* of Mitten. Root large and woody, used medicinally, and by the Laplanders for staining leather of a red colour. *Peduncles* axillary and terminal, forming a dichotomous cyme or panicle, and never springing from a joint that throws out roots or from the axile of a petiolate leaf. — This varies with 4 or 5 *petals*, when it becomes difficult to distinguish the *var. β.* from *P. reptans*, and some botanists are of opinion that the two plants are identical, their extremes being represented in *E. Bot.* *P. reptans* is often less creeping than in *E. B.* t. 862; and the present is sometimes not so panicked as in *E. B.* t. 864. Mr. Wilson finds them undistinguishable, while Mr. Forster and Nestler think them quite distinct.

\*\*\*\* *Leaves* quinate or ternate. *Flowers* white

10. *P. \* álba* L. (*white C.*); stems filiform procumbent, root-leaves quinate, upper ones ternate, leaflets oblong with converging serratures silky beneath, achenes glabrous. *E. B.* t. 1384.

Wales (?): Mr. Haviland (*in Huds.*). 4. 6, 7. — *Hairs* of the *receptacle* shorter than the *achenes*.

11. *P. \* tridentáta* Soland. (*three-toothed C.*); leaves ternate, leaflets oblong-cuneiform 3-toothed at the extremity glabrous above hairy beneath, petals oval longer than the calyx, achenes downy, stem ascending, *E. B.* t. 2389.

On Werron Hill, Clova, *G. Don*; but found by no one else. 4. 5, 6. — *Hairs* of the *receptacle* elongated in this and the next. A North American species.

12. *P. Fragariástrum* Ehrh. (*Strawberry-leaved C.*); leaves ternate, leaflets obovate deeply serrated silky on both sides (especially beneath), petals obcordate as long as the calyx, stems procumbent. *Fragaria sterilis* L.: *E. B.* t. 1785.

Woods, banks, and dry pastures, frequent. 4. 3—5. — *Calyx-segments* converging after flowering. *Achenes* glabrous.

### 9. SIBBÁLDIA Linn. Sibbaldia.

*Cal.* in 10 alternately large and small segments. *Pet.* 5. *Stamens* 5—10. *Achenes* 5—10, tipped with a short style, inserted on a minute dry receptacle (the bottom of the calyx).—Name given in honour of *Robert Sibbald*, who wrote on the Nat. History of Scotland about the latter end of the 17th century, and who published a figure of our Scottish species of this genus.

1. *S. procumbens* L. (*procumbent S.*); leaves ternate, leaflets wedge-shaped tridentate. *E. B.* t. 897.

Near and upon the summits of the Highland mountains of Scotland, abundant. 4. 7. — A small, glaucous, slightly hairy plant, woody at the base and roots. *Pet.* small, yellow, sometimes wanting. *Stam.* 5—7. *Pistils* 5—8 or 10. — Nearly allied to *Potentilla*, as Mr. W. Wilson well observes.

Tribe III. SANGUISORBIÆ. *Achenes* 1 or 2, enclosed within the dry tube of the calyx, which is contracted at the orifice. *Calyx* 3- or 5-cleft. *Petals* 0 or rarely 5.—Herbs or shrubs. *Leaves* often compound. (Gen. 10—13.)

### 10. ALCHEMILLA Linn. Lady's Mantle.<sup>1</sup>

*Cal.* 8-cleft, the 4 alternate and outer segments the smallest. *Pet.* 0. *Stam.* 1—4. *Achenes* 1—2. — Named from the Arabic *alkémelych*, *alchemy*, from its pretended alchemical virtues.

1. *A. vulgáris* L. (*common L.*); leaves reniform plaited 6—9-lobed green underneath, lobes rounded serrated.—*a.* leaves and petioles slightly pubescent or glabrous. *E. B.* t. 597.—*β.* leaves and petioles very pubescent or silky. *A. hybrida Pers.*

Hilly or northern pastures, abundant. 4. 6—8. — *Stem* 1 ft. high, or more. *Radical leaves* large, on long foot-stalks, those of the stem with connate toothed *stipules*, upper ones sessile and very small. *Flowers* in many usually rather lax, corymbose, terminal clusters, yellow-green. *Stam.* 4. *Germens* and *achenes* 1—2. *Style* lateral.

2. *A. alpína* L. (*alpine L.*); radical leaves digitate or digitato-partite, leaflets 5—7 obtuse serrated white and satiny beneath. *E. B.* t. 244. — *a.* leaflets distinct to the base. — *β.* leaflets conjoined sometimes to almost a third of their length. *A. argentea Don.* *A. conjuncta Bab.*

Mountains in the north of England, and especially Scotland. On Brandon mountain, Ireland. 4. 6—8. — One of the most elegant

<sup>1</sup> Mantle of our *Lady* (the *Virgin Mary*); therefore not "*Ladies' Mantle*," as written by many authors.

of our native plants. *Flowers* in interrupted spikes of small terminal or lateral corymbs. *Stam.* 4. Our  $\beta$ . is said to have been found wild in the Clova mountains by Mr. G. Don, and in Glen Sannox, in the Isle of Arran, both in Scotland: it has been for long a well-known denizen of our gardens, under the name of *A. hybridu*; but although it retains all its characters in cultivation (proving it to be a permanent variety), it appears to us to differ too little from the type of the species, to be admitted as distinct: in this genus, and even this order, the leaflets are not *jointed* with the petiole, and consequently, according to the view of De Candolle, do not form a *compound* leaf, but merely portions of a simple one: in  $\alpha$ . therefore the leaves are only divided to the base: in  $\beta$ . to near the base: there is no other difference. The fig. in *E. Bot.* seems to belong to the var.  $\beta$ .

3. *A. arrénsis* Sm. (*field L.*, or *Parsley Piert*); leaves trifid pubescent, lobes cuneate deeply cut, flowers sessile axillary. *E. B.* t. 1011. *Aphanes* L.

Fields and gravelly soils, and on wall-tops, where there is any covering of soil.  $\odot$ . 5—8—*Stems* branched, leafy, 4—8 inches long, frequently prostrate. *Leaves* alternate; *stipules* large. *Stam.* varying in number from 1—4. *Germens* 1 or 2.

#### 11. SANGUISÓRBA Linn. Burnet.

*Flowers* collected into a head, usually perfect. *Cal.* 4-lobed, superior, coloured, with 2—4 scales or bracteas at the base. *Pet.* 0. *Stam.* 4. *Stigmas* capitate, papillose. *Achenes* 1—2. Named from *sanguis*, blood, and *sorbeo*, to take up, or absorb; from the supposed vulnerary properties of the plant.

1. *S. officinális* L. (*great B.*); glabrous, spikes ovate, stamens about as long as the perianth. *E. B.* t. 1312. —  $\beta$ . spikes cylindrical. *Sm.*

Low moist meadows and pastures, on a calcareous soil; chiefly in the north of England; more rare in the Lowlands of Scotland. —  $\beta$ . West of Scotland. *h.* 6—8. — *Stem* 1—2 ft. high, branching upward. *Leaves* pinnate; *leaf.* ovate, somewhat cordate at the base. *Heads* of *flowers* much crowded, dark purple. *Limb* of the *perianth* in 4 ovate segments, its tube enveloping the *germen* and having at its base 1 ciliated scales or bracteas (*calyx* of many authors). *Achene* 1, rarely 2. We have not seen the var.  $\beta$ .: it cannot be *S. media* L. as supposed by Smith, that being a N. American plant with long stamens and a mere var. of *S. Canadensis*.

#### 12. POTÉRIVM Linn. Salad-Burnet.

*Flowers* collected into a head, monœcious or polygamous; upper ones fertile. *Cal.* with 3 or 4 bracteas at the base. *Pet.* 0. — *Barren fl.* *Cal.* of 4 deep segments. *Stam.* 30—40, with very long flaccid filaments. — *Fertile fl.* *Cal.* tubular, contracted at the mouth, with 4 deciduous teeth. *Stigmas* tufted. *Achenes* 1—2, invested with the hardened 4-angled tube of the

calyx. — Named from *poterium*, a *drinking-cup*: the plant having been used in the preparation of a drink, called in England a *cool-tankard*.

1. *P. Sanguisorba* L. (*common S.*); calyx of fruit sessile glabrous unarmed reticulate-rugulose not pitted, the angles margined, styles 2, stem somewhat angular. *E. B. t.* 860.

Dry and most frequently chalky pastures, abundant. Rather rare in Scotland and Ireland. *h.* 6—8. — *Stem* 1—2 ft. high. *Leaves* pinnated with ovate, serrated leaflets. *Flowers* dull purplish. *Inflorescence* in this and the next centrifugal, as in most of the genus. — The leaves taste and smell like cucumber, and are eaten in salad.

2. *P. muricatum* Spach (*muricated S.*); calyx of fruit sessile glabrous wrinkled with pits whose margins are muricated, angles crested, stem somewhat angular.

Dry calcareous soil. Near Cambridge; Heydon and Saffron-Walden, Essex; Box Hill, Warwickshire. *4.* 7. — Very similar to the last, of which it was formerly considered a variety, and from which it is chiefly distinguishable by the fructiferous calyx, and the much larger fruit.

### 13. AGRIMÓNIA Linn. Agrimony.

*Cal.* turbinate, at length hardened, covered with hooked bristles, 5-cleft. *Pct.* 5, inserted upon the calyx. *Stam.* 7—20. *Achenes* 2. — Name corrupted from *Argemone*, given by the Greeks to a plant supposed to cure the cataract in the eye, called *αργεμα*.

1. *A. Eupatoria* L. (*common A.*); cauline leaves interruptedly pinnate softly villous underneath, leaflets 7—9 rounded at the base with 6—8 coarse serratures on each side, terminal one stalked, spikes elongated interrupted, calyx-tube obconical deeply furrowed to the base, the teeth with a straight point, exterior spines spreading. *E. B. t.* 1335.

Borders of fields, waste places, and road-sides. *4.* 6, 7. — *Stem* 2 ft. or more high. *Leaflets* deeply serrated; intermediate smaller ones 3—5-cleft. *Flowers* yellow, in a long simple or branched spike, with a 3-cleft bractea at their bases.

2. *A. odorata* Mill. (*fragrant A.*); cauline leaves interruptedly pinnate softly villous underneath, leaflets 7—9 rounded at the base with 6—8 coarse serratures on each side, terminal one stalked, spikes elongated interrupted, calyx-tube campanulate even when in fruit, the teeth with a straight point, exterior spines very patent or reflexed.

Beaumont, Jersey: *Rev. W. W. Newbould.* *4.* 6, 7. — Of this we have seen no British specimens. According to C. A. Meyer, it differs from the last only by the mature calyx.

Tribe IV. ROSIDÆ. *Achenes numerous, hairy, terminated with the long persistent style, and enclosed within the fleshy (fruit-like) tube of the calyx, which is contracted at the orifice. Sepals 5. Petals 5. Stamens numerous. — Shrubs, with prickly or naked stems. Leaves pinnate. (Gen. 14.)*

14. *Rósa*<sup>1</sup> Linn. Rose. Dog-Rose. Sweet-Briar.

*Cal.* urn-shaped, fleshy, contracted at the orifice, terminating in 5 segments. *Pet.* 5. *Stam.* many. *Achenes* numerous, hairy, fixed to the inside of the calyx. — Named from the Celtic *Rhos*, or *Ros* in modern Gaelic; whence was probably derived *rhodd*, *red*; also the Greek name for a *rose*, *Ῥόδον*, and *ερυθρος*, *red*.

\* *Shoots setigerous, prickles slightly curved.*

† *Bractæas large.*

1. *R. \* Dicksoni* Lindl. (*Dickson's R.*); "shoots setigerous," prickles scattered slender subulate, leaflets oval coarsely and irregularly serrated hoary, sparingly glandulose beneath, calyx-segments long simple, fruit ovate-urceolate. *E. B. S. t.* 2707.

Ireland: discovered by *Mr. J. Drummond*. (Lindley.) *h.* 6. — Scarcely a native according to Irish botanists: it may prove to be a mere garden *var.* of the next. It is probable that Professor Lindley "has used the term *setæ* for setaceous prickles not tipped with a gland." *Mr. Borrer*.

2. *R. \* cinnamómea* L. (*Cinnamon R.*); shoots setigerous, prickles scattered slender subulate, leaflets lanceolate-oblong simply serrated downy and glandulose beneath, calyx-segments long simple, fruit small ovate. *E. B. t.* 2388. (*excl. the fruit.*)

Wood at Aketon Pasture, near Pontefract, Yorkshire (*Mr. Sabine* has, however, sought for it there in vain). At Birkhill, Galston, Ayrshire, but surely not wild. *h.* 5—7.

†† *Bractæas small or wanting.*

3. *R. spinosíssima* L. (*Burnet-leaved R.*); prickles crowded unequal mostly straight intermixed with *setæ*, leaflets small simply serrated, their disk eglandulose, calyx simple, fruit nearly globular. *E. B. t.* 187. *R. pimpinellifolia* L. — *β. pilosa*; "very dwarf, leaves acute hairy on the under surface." *Lindl.*

Heaths, &c., chiefly on sand and chalk; most common towards the sea. — *β.* Ireland. *h.* 5.

<sup>1</sup> For the characters of all the species of this most difficult genus, we are indebted to *Mr. Borrer*. Copious synonyms and illustrative remarks, for which there is not room in the present volume, may be found in the second edition of the present *Flora*, p. 226, &c.

4. *R. rubélla* Sm. (*red-fruited dwarf R.*); stem and branches densely setigerous throughout, prickles few slender nearly straight, leaflets simply serrated naked, their disk eglandulose, fruit oblong or urceolate. *E. B. t.* 2521, and fruit *t.* 2601. *fig.* 3.

Rare. Sandy sea-coast of Northumberland, sparingly. Banks of the Dec about Abergeldy. *h.* 5. — *Peduncles* setose.

5. *R. Hibernica* Sm. (*Irish R.*); shoots and ramuli sparingly setigerous, prickles scattered unequal, larger somewhat falcate, leaflets simply serrated hairy beneath, their disk eglandulose, calyx pinnate, fruit nearly globular. *E. B. t.* 2196.

Counties of Derry and Down, particularly near Belfast harbour. *h.* "6—11." *Smith.* — *Peduncles* naked.

6. *R. Wilsóni* Borr. (*Wilson's R.*); prickles crowded unequal straight intermixed with setæ, leaflets simply serrated hairy, their disk eglandulose, calyx simple, fruit ovate-urceolate. *E. B. S. t.* 2723.

On a declivity by the Menai, near Bangor. *h.* 6, 7. — *Peduncles* setose. Dr. Lindley thinks it a *var.* of *R. mollis*; but this and the two preceding seem to be but one species, only distinguishable from *R. spinosissima* by the scarlet not black fruit. As setæ pass insensibly into slender prickles or aciculæ, the species possessing the one may be expected to exhibit the other in some of its varieties; and the greater or less number of either can form no specific distinction.

7. *R. involúta* Sm. (*prickly unexpanded R.*); prickles crowded unequal straight, intermixed with setæ, leaflets doubly serrated hairy, glandulose beneath, stem dwarfish. *E. B. t.* 2068, and fruit *t.* 2601, *fig.* 2.

Hebrides, and Western Highlands of Scotland. Isle of Arran; Islay; Morven. Near Meggarnie in Glen Lyon, and elsewhere in the Highlands. *h.* 6. — Leaves often scarcely at all glandulose, except on the midrib.

8. *R. Sabini* Woods (*Sabine's R.*); shoots and ramuli setigerous, prickles scattered unequal straight or nearly so, leaflets doubly serrated hairy glandulose beneath. — *α.* calyx segments somewhat pinnate. *E. B. S. t.* 2594. — *β.* calyx segments almost simple, prickles more numerous. *R. Doniana Woods*: *E. B. S. t.* 2601. — *γ.* calyx segments almost simple, larger prickles falcate. *R. gracilis Woods*. *R. villosa* *E. B. t.* 583. (*fig. only.*)

Scotland and north of England. — *β.* Sussex, Warwickshire, Kingston-upon-Thames, and near Edinburgh. *γ.* Near Darlington; Pooley Bridge, and between Pooley and Lowther, Cumberland; and near Keswick. *h.* 6. — We do not see how this really differs from the last: the leaves are rather more glandulose, but not so much so as in the next section.



\*\* *Shoots mostly without setæ.*

† *Leaves glandulose.*

‡. *Prickles uniform or nearly so; setæ none or very few.*

9. *R. villósa* L. (*villous R.*); prickles uniform nearly straight, leaflets doubly serrated downy glandulose, calyx segments slightly pinnate, root shoots straight. *R. mollis* *E. B.* t. 2459.

North of England, Scotland, Wales and Ireland. *h.* 6, 7. — *Calyx* segments persistent.

10. *R. tomentósa* Sm. (*downy-leaved R.*); prickles mostly uniform straight or curved, leaflets doubly serrated downy glandulose, calyx segments copiously pinnate. *E. B.* t. 990. *R. scabriuscula* *Winch.* *E. B.* t. 1896. (*fig. only?*)

Hedges and thickets not unfrequent. . 6, 7. — *Calyx* segments persistent. This is surely a mere variety of the last.

11. *R. inodóra* Fries (*slightly scented B.*); prickles uniform uncinatè, leaves doubly serrated hairy mostly glandulose beneath, calyx segments closely pinnate mostly deciduous, ramuli without setæ, fruit elliptical or nearly globular. — *α.* leaves hairy beneath. *E. B. S.* t. 2610, *ad calcem.* *R. dumetorum* *E. B.* t. 2579. — *β.* leaves hairy on both sides. — *γ.* leaves more copiously glandulose, calyx-segments elongated persistent.

Thickets and hedges, chiefly in the south of England. — *β.* near Edinburgh and elsewhere. — *γ.* Glen Goy, Inverness-shire; near Newcastle. *h.* 6, 7.

12. *R. micrántha* Sm. (*small-flowered S.*); prickles uniform uncinatè, leaflets doubly serrated hairy glandulose beneath, calyx-segments and pinnæ elongated deciduous, fruit small elliptical and ovate, ramuli sparingly setigerous. *E. B.* t. 2490.

Open bushy commons, thickets and hedges, in the south of England. Abundant on chalk and gravel in some parts of Sussex and Surrey. Essex. South of Ireland. *h.* 6, 7.

‡‡ *Prickles various, intermixed with setæ.*

13. *R. rubiginósa* Linn. (*true S.*); prickles numerous, larger uncinatè, smaller subulate, leaflets doubly serrated hairy glandulose beneath mostly rounded at the base, calyx-segments and pinnæ elongated persistent, primordial fruit pear-shaped. *E. B.* t. 991.

Open bushy places, chiefly in the south of England. Abundant in some places on chalk: more rare in moist hedges. About Edinburgh; and near Passage in Ireland. *h.* 6, 7.

14. *R. sépium* "Thuil." (*small-leaved S.*); prickles numerous, larger curved, smaller subulate; leaflets small doubly serrated

hairy acute at each end glandulose beneath, calyx-segments and pinnæ elongated, fruit ovate? *Borr. in E. B. S.* t. 2653.

Near Bridport, Warwickshire. Heyford Leys, near Upper Heyford, Oxfordshire. *h.* 6, 7.

†† *Leaves eglandulose.*

‡ *Styles distinct, included, or nearly so.*

15. *R. canina* L. (*common D.*); prickles uniform hooked, leaves naked or slightly hairy, their disk eglandulose, calyx-segments fully pinnate deciduous, styles not united, shoots assurgent. — *α.* leaflets naked, carinate, serratures simp'l. *E. B.* t. 992. — *β.* leaflets naked carinate, serratures compound. *R. sarmentacea Woods: E. B. S.* t. 2595. — *γ.* leaflets naked flat, serratures simple. *R. surculosa Woods.* — *δ.* leaflets more or less hairy flat. *R. dumetorum Thuill.: E. B. S.* t. 2610. — *ε.* leaflets more or less hairy not flat. *R. Forsteri Sm.: E. B. S.* t. 2611.

Thickets, hedges, &c. very common. *h.* 6, 7.

16. *R. bractescens* Woods (*bracteated D.*); calyx-tube globose, prickles hooked, leaflets simply serrated downy beneath, bractæas overtopping the fruit.

About Ulverston, Lancashire; and Ambleside, Westmoreland. *h.* 6, 7. — Apparently a mere variety of the last.

17. *R. cæ'sia* Sm. (*glaucous D.*); prickles uniform uncinatè, leaflets doubly serrated downy, their disk eglandulose, calyx sparingly pinnate, styles not united, shoots assurgent. *E. B.* t. 2367. — *β. incana*, prickles strongly uncinatè from a much-lengthened base, fruit large oblong.

Highland valleys of Perthshire and Argyleshire. Northumberland and Durham. *β.* sent from Scotland to Mr. Sabine. *h.* 6, 7. — We do not distinguish this from *R. canina*.

†† *Styles united in a column, mostly exerted.*

18. *R. sýstyla* Woods (*close-styled D.*); prickles uniform uncinatè, leaves simply serrated, their disk eglandulose, calyx-segments sparingly pinnate deciduous, styles united hairless, shoots assurgent. *R. collina E. B.* t. 1895 (*excl. syn.*)

Thickets, hedges, &c. Sussex, Essex, Middlesex, Berkshire, Kent, Niddrie; hills to the North of Milngavie; and Fort Augustus; Scotland. Near Cork. *h.* 6, 7.

19. *R. arvensis* Huds. (*trailing D.*); prickles uncinatè, those of the ramuli feeble, leaves simply serrated deciduous (glaucouscent beneath), their disk eglandulose, calyx-segments sparingly pinnate deciduous, styles united hairless, shoots trailing. *E. B.* t. 188.

Woods, hedges, thickets, &c.; common in England, but rare in the mountainous districts. Lowlands of Scotland. Near Bray, Ireland.

h. 6, 7. — This is distinguished from all the other British species by its trailing habit; and from *R. systyla*, so far as we can see, by that character alone. It is frequently cultivated under the name of *Ayrshire Rose*; but the true one (*R. capreolata* Neill) has, we believe, the column of styles slightly hairy and shining leaves, and is considered by Sabine a deciduous var. of *R. sempervirens*, although it is more probably a hybrid between that species and *R. arvensis*.

SUB-ORD. III. POMEÆ Lindl. *Fruit consisting of several united carpels adhering by their back to the inside of the calyx-tube and forming an inferior 1—5-celled pome, the cells lined with a cartilaginous or bony substance. Seeds 1 or more, ascending. Petals several. — Trees or shrubs. Leaves alternate, simple or divided, with free stipules. Flowers in terminal cymes, white or pink. (Gen. 16—18.)*

### 15. MÉSPILUS Linn. Medlar.

*Cal. segments* large, foliaceous. *Pet.* large, roundish. *Disk* large, secreting much honey. *Styles* 2—5, glabrous. *Fruit* turbinate, with the upper ends of the cells, which are bony, exposed. — Named from *μεσπilah*, the Greek word for *Medlar*.

1. *M. \*Germánica* L. (*common M.*); leaves lanceolate a little downy, flowers solitary nearly sessile terminal, styles 5. *E. B. t.* 1523.

Hedges, in Cheshire and Sussex. Bidborough, Kent; Red-hill, Surrey; and, in its wild thorny state, in a hedge, between Reigate and Nutfield. Jersey. h. 5, 6.

### 16. CRATÆGUS Linn. Hawthorn.

*Cal. segments* short, acute. *Pet.* large, roundish. *Styles* 1—5. *Fruit* oval or round, concealing the upper end of the cells, which are bony. Lindl. — Named from *κρατος*, *strength*, in allusion to the extreme hardness of the wood.

1. *C. Oxyacantha* L. (*Hawthorn, White-thorn, or May*); spiny, leaves glabrous cut into 3 or 5 deeply-serrated segments cuneate at the base, flowers corymbose, calyx not glandular, styles 1—3. *E. B. t.* 2504. *C. monogyna* Jacq.

Woods and hedges. h. 5, 6. — Variable in the form of its leaves, in the downiness of the cal., and in the colour of the flower and fruit.

### 17. COTONEÁSTER Lindl. Cotoneaster.

*Flowers* polygamous. *Cal.* turbinate, with 5 short teeth. *Pet.* 5, small, erect. *Stam.* erect, the length of the teeth of the cal. *Fruit* turbinate, with its nuts adhering to the inside of the cal., but not cohering in the centre. — Named from *Cotoneum* (*κωτονιον*, Gr.), the *Quince*.

1. *C. vulgaris* Lindl. (*common C.*); leaves oval, calyx glabrous except at the margin, peduncles slightly downy. *E. B. S.* t. 2713.

Limestone cliffs at Ormeshead, Caernarvonshire. *h.* 5, 6.

# 18. *Pyrus* Linn. Pear. Apple. Service.

*Cal.* of 5 small segments. *Pet.* 5, large, roundish. *Styles* 2—5. *Fruit* fleshy, with 5 cartilaginous or coriaceous 2-seeded cells. — Name derived from the Celtic *peren*, or Gaelic *peur*, a *pear*; but more immediately, on account of its shape, from *πυρ*, *flame*; which, as well as the origin of *fir*-tree, may arise from the ancient polyglot vocable *ar*, *er*, *or*, or *ur*, denoting *light* or *flame*.

1. *P. communis* L. (*wild P.*); leaves simple ovate serrated, peduncles corymbose, fruit turbinate, styles distinct. *E. B.* t. 1784.

Woods and hedges. *h.* 4, 5. — Origin of our *Pear*.

2. *P. Malus* L. (*Crab A.*); leaves ovate acute serrated, flowers in a sessile umbel, styles combined below, fruit globose. *E. B.* t. 179.

Woods and hedges. *h.* 5. — *Fruit* austere, of which verjuice is made. — Origin of our *Apple*, a word derived from the Celtic *ball*, a *round body*; whence also *abhall* in Gaelic, and *apfel* in German.

3. *P. torminális* Sm. (*wild S.*); leaves ovate or cordate lobed and serrated, lower lobes larger and spreading, peduncles corymbose. *Cratægus* L.: *E. B.* t. 298.

Woods and hedges, chiefly in the middle and south of England. *h.* 5, 6. — Young *leaves* pubescent or tomentose beneath, old ones almost glabrous. *Flowers* rather large, white. *Fruit* small, greenish-brown, spotted.

4. *P. \*doméstica* Sm. (*true S.*); leaves pinnated downy beneath, leaflets serrated upwards, flowers paniced, fruit (large) obovate. *E. B.* t. 350. *Sorbus* L.

Solitary tree in Wyre Forest, near Dewdley, Worcestershire. *h.* 5. — Segments of the *calyx* recurved after flowering. *Styles* jointed, woolly to the apex. *Habit* of the following; but differing in its rather larger *flowers* and the much larger *fruit*, which resembles a small pear, an inch long, with a horny lining to the cells. The *inflorescence*, too, although sometimes short and broad, is never a true corymb; but the chief character lies in the fruit.

5. *P. aucupária* Gærtn. (*Mountain-ash* or *Rowan-tree*); leaves pinnated usually glabrous when old, leaflets serrated, flowers corymbose, fruit (small) globose. *Sorbus* *E. B.* t. 337.

Mountainous woods and hedges, frequent, especially in the Highlands of Scotland. *h.* 5, 6. — The cells of the fruit are coriaceous and flexible in this and the next.

6. *P. A'ria* Sm. (*white Beam-tree*); leaves ovate serrated cut or pinnatifid or partly pinnate white and downy beneath, flowers corymbose, fruit globose. —  $\alpha$ . leaves slightly cut very white underneath. *E. B.* t. 1858. —  $\beta$ . leaves cut and lobed usually less white beneath. *P. intermedia Ehrh.* —  $\gamma$ . leaves pinnatifid and often pinnate at the base. *P. pinnatifida Ehrh.*: *E. B.* t. 2331.

Mountainous woods, especially in a chalk or limestone country; England and Scotland. Cunnamara and Killarney, Ireland. —  $\beta$ . Castle Dina Bran? —  $\gamma$ . Isle of Arran, Scotland; and near Dartford, Kent.  $h$ . 5, 6. — *Fruit* red, rather larger than in the last. To us  $\beta$ . appears to be a fertile hybrid between the type of this species and *P. terminalis*; and  $\gamma$ . another between this and *P. aucuparia*.

### ORD. XXVIII. ONAGRACEÆ *Juss.*

*Calyx-tube* adnate with the *ovary* entirely or in part; *limb* 2- or generally 4-lobed, the lobes valvate in æstivation. *Petals* 2, generally 4, twisted in æstivation, arising from the mouth of the calyx. *Stamens* inserted into the calyx, and twice as many as its lobes, or fewer. *Ovary* of 2—4 cells, often crowned by a disk. *Style* filiform; *stigma* capitate or lobed. *Fruit* a berry, or dry and usually dehiscent. *Seeds* without albumen. — Herbs or Shrubs. Leaves frequently opposite.

1. *EPILOBIUM*. Stam. 8. Cal.-limb divided nearly to the base, deciduous. Seeds many, with a tuft of hairs.
2. *CENOTHERA*. Stam. 8. Cal.-limb tubular at the base, deciduous. Seeds many, naked.
3. *ISNARDIA*. Stam. 4. Cal.-limb 4-parted, persistent. Seeds many, naked.
4. *CIRCÆA*. Stam. 2. Seeds 1—2.

#### 1. *EPILOBIUM* *Linn.* Willow-herb.

*Cal.-limb* deciduous, 4-partite or nearly so. *Pet.* 4. *Stam.* 8. *Capsule* elongated 4-celled, 4-valved, many-seeded. *Seeds* with a tuft of hairs at one extremity. — Named from *ἐπι*, upon, and *λοσος*, a pod; the flower being placed upon the top of the elongated seed-vessel.

\* *Flowers irregular. Stamens and style bent down. Cal.-limb 4-partite.*

1. *E. angustifolium* L. (*Rose-bay W.*); leaves scattered lanceolate or linear-lanceolate veined glabrous, flowers irregular subspicate, stamens declined. —  $\alpha$ . flowers larger, capsule scarcely an inch long spreading. *E. B.* t. 1947. —  $\beta$ . flowers smaller, capsule about  $2\frac{1}{2}$  inches long linear erect. *E. macrocarpum Steph. in Ann. Nat. Hist.* viii. 170.

Moist banks and margins of woods; rare in England, less so in

Scotland. Near Enniskerry, Ireland. 4. 7. — Stems 4—6 feet high. Whole plant very handsome. The var. *a.* is that common in gardens, and rarely produces seed.

\*\* *Flowers regular. Stamens and styles erect. Stigmas 4-cleft. Cal.-limb cleft down to its short campanulate base.*

2. *E. hirsútum* L. (*great hairy W.*); leaves semi-amplexicaul ovate-lanceolate deeply serrated hairy, stem very much branched hairy, root creeping, stigma 4-cleft. *E. B.* t. 838.

Sides of ditches, rivers, and lakes, frequent. 4. 7, 8. — Almost equal in size to the last. Root perennial, creeping. *Flowers* corymbose, large.

3. *E. parviflórum* Schreb. (*small-flowered hairy W.*); leaves sessile lanceolate slightly toothed downy on both sides, stem nearly simple very downy or nearly glabrous, root fibrous, stigma 4-cleft. *E. B.* t. 795.

Marshes and banks of lakes and rivers, frequent. 4. 7, 8. — The much smaller size of this species in all its parts, being scarcely more than 1—1½ ft. high, besides the above characters, serves to distinguish it from the preceding, with which it has been confounded.

4. *E. lanceolítum* Seb. et Maur. (*Spear-leaved W.*); “leaves stalked lanceolate irregularly toothed, stem obtusely angular, stigma slightly lobed, root fibrous, scions none.” *Borr. E. B. S.* t. 2935.

Near Tintern, Monmouthshire; and near Bristol; *Mr. Thwaites*. Jersey, *Mr. Babington*. 4. 7—9. — With this we are scarcely acquainted, and we have seen no British specimen: it seems to be the *E. rosea* of some Swiss collectors, comprehended by Seringe in *De Candolle's Prod.*, along with *E. roseum* Sm., under his character of *E. montanum*.

5. *E. montánum* L. (*broad smooth-leaved W.*); leaves shortly stalked ovate-oblong acute rounded at the base glabrous all toothed, stem rounded pubescent as well as the fruit, stigma 4-cleft, root fibrous, scions none. *E. B.* t. 1177.

Dry shady banks, walls, roofs of cottages, &c., frequent. 4. 6, 7. — Stem 6 inches to 1 ft. high. Much resembling the following; but distinguished by its 4-fid stigma: it has, too, usually more shortly petiolate, deeply toothed leaves; and larger flowers.

\*\*\* *Flowers regular. Stamens erect. Stigma undivided or nearly so.*

6. *E. róseum* Schreb. (*pale smooth-leaved W.*); leaves ovate-lanceolate stalked finely toothed, stem erect obsoletely angled, stigma undivided or slightly lobed, root fibrous, scions none. *E. B.* t. 693.

About London, in Essex, Sussex, and Hants. Forfarshire and Moray. 4. 7, 8. — Distinguished from *E. montanum* by its clavate stigma, and from *E. tetragonum* by its broader petiolate leaves, and stem not so distinctly 4-sided; but if *E. roseum* DC. be the same, the leaves are often quite sessile.

7. *E. tetragónum* L. (*square-stalked W.*); leaves lanceolate sessile denticulate, stem with 2—4 angles, stigma undivided, root with scions, flower-buds erect, seeds oblong-obovate. *E. B. t.* 1948. *E. virgatum* Fries.

Sides of ditches and watery places, common. 4. 7, 8. — In the genuine forms of the species the scions are short and terminate in a rose-shaped tuft of leaves. In what is called *E. virgatum*, the scions are as in the next, between which and the present species it is perhaps rather a hybrid.

8. *E. palústre* L. (*narrow-leaved Marsh W.*); leaves narrow-lanceolate sessile nearly entire and as well as the rounded erect stem subglabrous, stigma undivided, root with filiform scions, flower-buds drooping, seeds fusiform. *E. B. t.* 346.

Boggy places and the sides of lakes and ditches. 4. 7, 8. — About a foot high. Scions elongated with scattered leaves. Flowers small.

9. *E. alsinifólium* Vill. (*Clickweed-leaved W.*); leaves lucid ovate-acuminate nearly sessile glabrous, lowermost ones entire, the rest toothed, stem rounded, its upper part and germen slightly pubescent, stigma entire, root with elongated scions with scattered leaves. *E. B. t.* 2000.

Sides of alpine rivulets. On the Cheviots, Aber waterfall, N. Wales. Frequent on the Scottish, especially the Highland, mountains. 4. 7. — This has many of the characters, in its leaves and stem, of *E. montanum* and *E. roseum*; but the leaves have a flaccid subpellucid appearance, and the stem is stoloniferous, so that the eye readily distinguishes the species. Wahlberg considers it a *var.* of the following: in Wales, however, where *E. alsinifolium* is found, *E. alpinum* is never seen.

10. *E. alpinum* L. (*alpine W.*); leaves elliptical glabrous on short foot-stalks nearly entire, stem nearly glabrous and fruit entirely so, stigma undivided. *E. B. t.* 2001.

Wet places near springs, and by the sides of rivulets on all the Highland mountains. 4. 7. — Stem 2—4 inches high. Root with scions, which are either short with a tuft of leaves or elongated with scattered leaves. Stem with two lines of very obscure pubescence, procumbent at the base. Flowers seldom more than 1 or 2 from the summit of the stalk, at first gracefully drooping, bright purple-red. Fruit erect, often as long as the plant itself.

## 2. *Ænothéra* Linn. Evening-Primrose.

*Cal.-limb* deciduous, tubular at the base, deeply 4-cleft upwards; the segments reflexed, more or less combined. *Pet.* 4. *Stam.* 8. *Caps.* 4-valved, with many naked seeds. — Named from *oivos*, wine, and *ἄνωπα*, searching or catching, from the root having caught the perfume of wine.

1. *Æ. \*biennis* L. (*common E.*); leaves ovate-lanceolate

toothed, stem somewhat hairy, flowers sessile subspicate, stamens about as long as the corolla, capsules nearly cylindrical 4-toothed. *E. B. t.* 1534.

Sandy soils near Liverpool, also in Suffolk and Warwickshire. ♂. 7—9. — This genus is altogether American. Plant 2—3 feet high. *Stem* roughish. *Flowers* yellow, fragrant, expanding in the evening.

### 3. *ISNARDIA* Linn. Isnardia.

*Cal.-limb* 4-partite, permanent. *Pet.* 4, or wanting. *Stam.* 4. *Stigma* capitate. *Caps.* obovate or cylindrical, 4-celled, nearly dehiscent, many-seeded. *Seeds* naked. — Named after *Antoine d'Isnard*, a botanist and professor at Paris, in the beginning of the last century. — As the genus is defined here, it includes *Ludwigia*.

1. *I. palustris* L. (*Marsh I.*); stem procumbent rooting glabrous, leaves opposite ovate acute stalked, flowers axillary solitary sessile apetalous, capsule obovate 4-angled. *E. B. S. t.* 2593.

South of England, very rare. In a pool at Buxtead, Sussex. Abundant in a bog on Petersfield Heath, also near Brockenhurst, Hants. Jersey. ☉. 6, 7. — Detected by *Mr. Goodyer* on Petersfield Heath, previous to 1667, but lost sight of until rediscovered in Sussex, by *Mr. Borrer*, in 1827. It is frequent on the continent of Europe, in N. America, and the temperate parts of Asia.

### 4. *CIRCE'A* Linn. Enchanter's Nightshade.

*Cal.-limb* deciduous, shortly tubular at the base, deeply 2-cleft upwards. *Cor.* of 2 petals. *Stam.* 2. *Ovary* 1—2-celled; *ovules* solitary in each cell, erect. *Stigma* 2-lobed. *Caps.* hispid with hooked hairs, scarcely dehiscent, 1—2-celled; cells 1-seeded. — Named from the enchantress *Circe*, either from the prettiness of its flowers, or, as some say, from its growing in damp shady places, where plants used for incantations are found.

1. *C. Lutetiana* L. (*common E.*); stem erect pubescent, leaves ovate acuminate slightly repand toothed usually longer than the petiole, bracts none, ovary globose 2-celled at length broadly obovate. *E. B. t.* 1056.

Woods and coppices in shady situations, common. 2. 6—8. — *Root* creeping. *Stem* 1—1½ ft. high. *Leaves* scarcely cordate at the base, upper ones narrow-ovate. — The only certain character between this and the next is afforded by the structure of the ovary, as first pointed out by *Dr. Wight*; that giving it the difference of external form: but even this is diminished in value by the 2-lobed stigma, indicating a tendency to produce the second cell also, in the ovary of *C. alpina*. The nectary which surrounds the base of the filament is a little more prominent than in the following species.



2. *C. alpina* L. (*alpine E.*); stem ascending nearly glabrous, leaves cordate toothed shining as long as the petioles, pedicels subtended by minute setaceous bracts, ovary 1-celled at length inversely oblong. *E. B. t.* 1057.

Woods, coppices, and stony places, especially by the sides of lakes in the north of England and Scotland 4. 7, 8. — This is very near to the preceding; but is usually much smaller and with a narrower ovary and fruit. Mature fruit, which is abundant on *C. Luetitiana*, we have seldom observed on this plant. What is called *C. intermedia* sometimes belongs to the present species, sometimes to the last.

### ORD. XXIX. HALORAGACEÆ R. Brown.

*Calyx-tube* adnate with the ovary; *limb* of fertile flowers minute, 3—4-partite or wanting. *Petals* present or wanting. *Stamens* equal in number to the lobes of the calyx, or double as many, rarely fewer. *Ovary* with 1—4 cells; *ovules* solitary pendulous. *Stigmas* as many as there are cells, papillose or penicilliform. *Fruit* dry, indehiscent, 1—4-celled, or composed of 4 indehiscent carpels slightly cohering by their inner angles and eventually separating. *Seeds* solitary, pendulous. *Albumen* fleshy, sometimes very thin. *Embryo* straight. *Radicle* superior. — Mostly Herbs (the British ones especially), aquatics. Leaves various as to insertion. The stamens and pistils often separated; the former are then inserted with the petals into the base of the calyx.

1. HIPPURIS. Stam. 1. Stigma 1. Fruit 1-seeded.

2. MYRIOPHYLLUM. Monœcious. Stam. 4—8. Stigmas 4. Fruit 4-seeded.

#### 1. HIPPURIS Linn. Mare's Tail.

*Perianth* single, superior, forming a very indistinct rim to the germen. *Stam.* 1. *Style* 1. *Fruit* 1-celled, 1-seeded. — Named from ἵππος, a horse, and οὐρα, a tail.

1. *H. vulgaris* L. (*common M.*); leaves linear 6—8 or 10 in a whorl. *E. B. t.* 763.

Ditches and, usually, stagnant waters; less frequent in Scotland. 4. 6, 7. — *Stem* erect, simple, jointed. *Whorls* of about 8 leaves, which are callous at the point. *Flowers* at the base of each of the upper leaves, not unfrequently destitute of stamen. In deep streams of water this plant attains to 2 or 3 feet, with the leaves excessively crowded, 3 and even 4 inches in length, pellucid, with an opaque nerve, their points not callous; the whole plant submerged and barren.

#### 2. MYRIOPHYLLUM Linn. Water-Milfoil.

Monœcious. *Barren fl.* *Cal.* inferior, of 4 leaves. *Pet.* 4.

*Stam.* 4—8. — *Fertile fl.* *Cal.* 4-lobed. *Pet.* 4. *Stam.* 4—8, or wanting. *Stigmas* 4, sessile. *Fruit* of 4, sessile, subglobose, 1-seeded carpels, at length separating. — Name, *μυριος*, a *myriad*, and *φυλλον*, a *leaf*, from its numerous leaves.

1. *M. verticillatum* L. (*whorled W.*); flowers all whorled subtended by pinnatifid or pectinate bracts longer than the flowers. *E. B. t.* 218. *M. pectinatum* DC.

Ponds and ditches throughout England and Wales. *4.* 7, 8. — Bractæas variable in length; when many times longer than the flowers, it is *M. verticillatum* DC.; when only 2—3 times as long, it is *M. pectinatum* DC. But between these there all intermediate forms.

2. *M. spicatum* L. (*spiked W.*); flowers all whorled longer than but subtended by bracts forming an interrupted leafless spike. *E. B. t.* 83.

Ditches and stagnant waters, common. *4.* 6, 7. — *Stems* slender, much branched. *Leaves* 4 in a whorl, finely pectinated and always submerged. *Spikes* slender, 3—5 inches long, erect when in bud. *Bracts* small, lower ones pectinate, upper ovate and entire. This only differs from some forms of the last by the still shorter bractæas.

3. *M. alterniflorum* DC. (*alternate-flowered W.*); sterile flowers mostly alternate on an erect leafless spike, fertile ones 1—4 in the axils of pectinated leaves at the base of the spike. *E. B. S. t.* 2854.

Ponds and ditches in many places, in England, Jersey, and Scotland. *4.* 5—8. — Very near the preceding, it must be confessed, or, as it were, intermediate between it and *M. verticillatum*. Dr. Bromfield considers the leaves to be always 3 in a whorl, not 4; but they are not so represented in *E. Bot.* *Spikes* drooping when in bud.

## ORD. XXX. LYTHRACEÆ Juss.

*Calyx* of 1 piece, free, persistent, the lobes varying in number, valvate or distant in æstivation, often with intermediate teeth. *Petals* inserted upon the calyx between its lobes, caducous, sometimes 0. *Stamens* inserted within the tube of the calyx, equal to, or double or triple the number of petals. *Ovary* 1, superior. *Style* 1; *stigma* usually capitate. *Capsule* membranous, 2—4-celled, opening longitudinally or irregularly. *Seeds* numerous, without *albumen*, on an axile placenta. — Herbs, with usually opposite leaves, without stipules: flowers axillary or racemose or spiked. — Properties astringent. *Henna* of Ægypt is extracted from *Lawsonia inermis*.

1. LYTHRUM. Calyx tubular.

2. PERIS. Calyx campanulate.

1. LYTHRUM Linn. Purple-Loosestrife.

*Cal.* inferior, tubular, with 8—12 teeth, the alternate ones

subulate. *Petals* 4—6. *Stam.* as many as, or twice as many as the petals. *Style* filiform. *Capsule* 2-celled. — Name, *λυθρον*, *blood*, — it is said from the red colour of the flowers.

1. *L. Salicária* L. (*spiked P.*); leaves opposite lanceolate cordate at the base, flowers in whorled leafy spikes with 12 stamens, bracts none. *E. B.* t. 1061.

Watery and marshy places, frequent. *fl.* 7—9. — *Stems* 2—3 ft. high, erect, 4-sided. *Spikes* very long, of beautiful purple flowers. *Cal.* striated, the subulate teeth twice as long as the others. *Pet.* oblong, cuneiform. *Stam.* 6 long and 6 short. *Style* varying in length.

2. *L. hyssopifolium* L. (*hyssop-leaved P.*); leaves mostly alternate linear-lanceolate obtuse, flowers axillary solitary, bracts 2 minute subulate, stamens about 6. *E. B.* t. 292.

Moist and occasionally inundated places, chiefly in the east of England. ☉. 6—10. — A humble annual, 4—6 inches high, with small axillary flowers. *Cal.-teeth* all short.

## 2. *PÉPLIS* Linn. Water-Purslane.

*Cal.* campanulate, with 6 large and 6 alternating small teeth. *Pet.* 6, often wanting. *Stam.* 6. *Style* very short. *Caps.* 2-celled. — Named from *πεπλιον*, anciently applied to the genus *Portulaca*, now to one somewhat similar in habit.

1. *P. Pórtula* L. (*common W.*); flowers axillary solitary, leaves obovate. *E. B.* t. 1211.

Watery places, not unfrequent. ☉. 7, 8. — *Plant* prostrate, 5—6 inches long, creeping, little branched. *Leaves* opposite, glabrous, tapering at the base.

## ORD. XXXI. TAMARISCACEÆ Desv.

*Calyx* 4—5-partite, persistent, free, with an imbricated æstivation. *Petals* 4—5, from the base of the calyx, marcescent. *Stamens* inserted into the margin of a scutelliform disk, equal in number to the petals, or twice as many. *Ovary* superior, 1-celled. *Styles* about 3, or none. *Stigmas* 3, or united. *Capsule* 3-gonal, 3-valved, 1-celled, with many comose seeds on three placentas, at the base of the cell or along the middle of the valves. *Albumen* 0. — Shrubs, with twiggy branches and small scale-like leaves. *Tamarix Gallica* and *Africana* yield sulphate of soda: the former, or a variety of it, also affords, according to Ehrenberg, the *Manna* of Mount Sinai.

## 1. *TÁMARIX* Linn. Tamarisk.

*Stam.* equal, distinct. *Stigmas* distinct, sessile, feathery. *Caps.* 1-celled, 3-valved, many-seeded. *Seeds* without a beak, pappose. — Named from the *Tamarici*, a people who inhabited

the banks of the Tamaris, now *Tambra*, in Spain, where the Tamarisk abounds.

1. *T. \*Anglica* Webb (*English T.*); leaves quite glabrous somewhat narrowed at the base, flower-buds ovate, angles of the disk 5 acute tapering into the 5 filaments and then ovate apiculate, capsule rounded at the base abruptly narrowed upwards. *T. Gallica* L.: *E. B.* t. 1318.

Rocks, cliffs, and sandy shores by the sea, about the Lizard and St. Michael's, Cornwall; Hurst Castle and Hastings. Near Landguard Fort; but evidently planted. "Planted, no doubt, every where." *Mr. Borrer.* h. 7. — *Leaves* minute, amplexicaul, appressed, acute. <sup>1</sup> *Spikes* lateral, somewhat panicled, slender, much longer than broad.

# ORD. XXXII. CUCURBITACEÆ<sup>1</sup> Juss.

Frequently monœcious or diœcious. *Calyx* 5-toothed, the tube adnate with the ovary. *Corolla* 5-cleft, often scarcely distinguishable from the calyx, frequently reticulated. *Stamens* 5, often more or less cohering. *Ovary* 1-celled, inferior, with 3 parietal receptacles. *Style* short. *Stigmas* lobed. *Fruit* fleshy. *Seeds* flat, in a juicy aril. *Embryo* flat. *Albumen* 0. *Cotyledons* foliaceous, nerved. — *Succulent climbing plants, with extra-axillary tendrils (in the place of a stipule), frequently scabrous.* This order contains *Cucurbita*, the *Gourd*; *Ecbalium purgans*, the *Elaterium*, a powerful cathartic; *Cucumis*, the *Cucumber*, and *Melons*; *Citrullus Colocynthis*, the *Colocynth*, bitter-apples, or bitter *Cucumber*; *Lagenaria vulgaris*, *Bottle-gourd*, &c.; all abounding in a bitter laxative.

## 1. BRYONIA Linn. Bryony.

*Cor.* 5-cleft. *Filaments* 3-adelphous, inserted at the base of the corolla. *Anthers* 1-celled, 3-adelphous, applied to the edge or back of the connectivum, and forming a sinuous line. *Style* trifid: *stigmas* somewhat reniform or bifid. *Fruit* ovoid or globose, baccate, few-seeded. — Named from βρῶν, to shoot, or grow rapidly, in allusion to the quick growth of the stems.

1. *B. dioica* Jacq. (*red-berried B.*); leaves palmate rough on both sides, flowers diœcious. *E. B.* t. 439.

Thickets and hedges, frequent in England; not indigenous to Scotland. h. 5—9. — *Root* very large, white and branched. *Stem* long, branched, weak, with simple tendrils. *Flowers* in short axillary racemes. *Cor.* whitish, with green veins. *Berries* red. The plant abounds with a fetid and acrid juice.

<sup>1</sup> From the corolla being gamopetalous, this is artificially near *Caprifoliaceæ*; but it is naturally nearer *Passifloraceæ*, which has distinct petals. Some botanists consider the calyx a bractea, the corolla as the calyx, and remove this to *MONOCHLAMYDÆÆ*.

ORD. XXXIII. PORTULACEÆ *Juss.*

*Sepals* 2. *Petals* inserted into the base of the calyx (somewhat hypogynous), mostly 5, usually distinct, sometimes wanting. *Stamens* of uncertain number, opposite the petals when of the same number. *Ovary* superior, 1-celled. *Style* 1 or 0. *Stigmas* several. *Capsule* opening transversely or by 3 valves. *Seeds* numerous on a central receptacle. *Albumen* farinaceous, surrounded by the curved *embryo*. — *Succulent Herbs or Shrubs*. *Portulaca sativa* is the *Purslane*.

1. *MÓNTIA* *Linn.* Blinks.

*Cor.* of 5 irregular petals, somewhat hypogynous, united at the base into one split up in front. *Stam.* 3, inserted upon the *corolla* and opposite to its smaller segments. *Stigmas* 3, almost sessile. *Caps.* 3-valved, 3-seeded. — Named in honour of *Joseph de Monti*, a professor of Botany and Nat. History at Bologna.

1. *M. fontána* L. (*Water B.* or *Chickweed*). *E. B.* t. 1206.

Rills, springy and wet places. ☉. 4—8. — Whole plant succulent, varying considerably in size. *Leaves* small, opposite, spatulate. *Flowers* white, at first drooping. *Seeds* 3, subreniform, dotted.

ORD. XXXIV. PARONYCHIACEÆ *St. Hill.*

*Sepals* 5 (rarely 3 or 4), more or less cohering at the base. *Petals* minute, alternating with the lobes of the calyx, or 0. *Stamens* inserted into the base of the calyx (somewhat hypogynous), and opposite to its lobes when as many. *Ovary* superior. *Styles* 2—5. *Fruit* small, dry, 1-celled, 1—5 valved, or indehiscent. *Seeds* numerous on a free central receptacle, or solitary and suspended from a long stalk arising from the base of the cell. — *Small branching herbaceous or suffruticose plants, with sessile entire leaves and membranaceous stipules*. — An Order closely allied in many respects to *CARYOPHYLLACEÆ*, as also to *AMARANTHACEÆ* and *CHENOPODIACEÆ*, and, like these two, having frequently a single perianth.

\* *Fruit 1-seeded.*

1. *CORRIGIOLA*. Fruit indehiscent. Petals oblong. Leaves alternate.
2. *HERNIARIA*. Fruit indehiscent. Sepals herbaceous flat. Petals filiform. Leaves opposite.
3. *ILLECEBRUM*. Fruit splitting into valves. Sepals cartilaginous cucullate. Petals 0 or subulate. Leaves opposite.

\*\* *Fruit, a several-seeded capsule.*

4. POLYCARPON. Sepals keeled at the back, subcucullate at the apex. Petals small, narrow, emarginate. Styles 3.
5. SPERGULARIA. Sepals flat. Petals ovate, entire, as large as the calyx. Styles usually 3.
6. SPERGULA. Petals ovate, entire, as large as the calyx. Styles 5, alternate with the sepals.

### 1. CORRIGIOLA Linn. Strapwort.

*Cal.* 5-partite, permanent. *Pet.* 5, oblong, about the length of the calyx. *Stam.* 5. *Styles* 3. *Fruit* indehiscent, 1-seeded. Leaves *alternate*. — Named from *corrigia*, a *strap*, or *thong*; formerly applied to the *Polygonum aviculare* on account of its long pliant stems: and now to a plant which is somewhat similar to it in habit.

1. *C. littoralis* L. (*Sand S.*); stem leafy among the flowers. *E. B.* t. 668.

Rare; on the south-western coast of England. On Slapham sands and near the Star-point, Devon; and at Helston, Cornwall. ☉. 7, 8. — *Stems* numerous from the top of the root, spreading, slender. *Leaves* linear, obtuse, somewhat fleshy and very glaucous. *Flowers* small.

### 2. HERNIÁRIA Linn. Rupture-wort.

*Cal.* 5-partite, permanent. *Pet.* 5, filiform, resembling sterile stamens, and inserted with them. *Stam.* 5, inserted upon a fleshy disk. *Stigmas* 2, nearly sessile. *Fruit* indehiscent, 1-seeded. Leaves *opposite*. — Named from the plant having been supposed to be useful in the cure of *Hernia*.

1. *H. glabra* L. (*glabrous R.*); stems prostrate herbaceous clothed with minute decurved hairs woody at the base in age, leaves oval a little tapering at the base nearly glabrous or ciliate and more or less hairy, clusters of sessile flowers axillary, calyx glabrous or with small hairs. — *α.* leaves quite glabrous. *E. B.* t. 206. — *β.* leaves ciliated and sometimes with hairs on the surface. *H. glabra β. Bab.* *H. ciliata Bab.*: *E. B. S. t.* 2857.

Near Newmarket, Lizard, Cornwall, and in some other of the southern counties of England. Jersey and Guernsey. Western part of Kerry, Ireland. 4. 7, 8. — The Lizard affords both the glabrous and hairy states of this variable plant; and there is every gradation in the inflorescence between it and the *H. ciliata*. In general even the most glabrous states more resemble Mr. Babington's figure of *H. ciliata*, than Smith's figure of *H. glabra*, which represents an undeveloped state of the plant.

2. *H. hirsuta* L. (*hairy R.*); stems herbaceous prostrate clothed with patent hairs, leaves oval oblong, clusters of sessile flowers axillary, calyx hairy. *E. B.* t. 1379?

Sandy ground near Barnet; *Hudson*. *h.* 7, 8. — Messrs. Milne and Gordon, in their *Indigen. Bot.* 1. 455, say, "We found it in a field at Finchley and at Colney Hatch, near Barnet, where Hudson found it," but as Mr. Babington has ascertained the Finchley plant to be *H. glabra*, it is also probable that Hudson's one was the hairy state of that species which is often cultivated under the name of *H. hirsuta*, and to which Smith's Cornish specimens belong. What was intended by the figure in *E. Bot.* it is difficult to say.

### 3. *ILLECEBRUM* Linn. Knot-grass.

*Sep.* 5, permanent, cartilaginous, cucullate, with an awl-shaped point, at the back below the apex. *Pet.* 0, or reduced to 5 subulate scales. *Stam.* 5. *Stigmas* 2, nearly sessile. *Caps.* 1-seeded, irregularly 5- or 10-valved. Leaves *opposite*. — Name: *illecebra*, an *enticement* or *attraction*, anciently given to a showy tribe of plants, now confined to a genus possessing few charms.

#### 1. *I. verticillatum* L. (*whorled K.*). *E. B.* t. 895.

Marshy or boggy ground, in Devonshire and Cornwall. *4.* 7. — A small plant with spreading procumbent filiform glabrous stems; broadly ovate leaves, white scariosse stipules jagged at the margin; and numerous flowers in axillary whorls, the calyx of which is white, very cartilaginous, and rounded at the base.

### 4. *POLYCARPON* Linn. All-seed.

*Sep.* 5, keeled at the back, subcucullate at the apex. *Pet.* 5, shorter than the calyx, emarginate. *Stam.* 3—5. *Styles* 3, very short. *Caps.* 3-valved, many-seeded. — Named from *πολυς*, *many*, and *καρπος*, *fruit*; applied by the ancients to the *Polygonum aviculare*, to which the present genus is somewhat similar.

1. *P. tetraphyllum* L. (*four-leaved A.*); triandrous, sepals mucronate, petals notched, leaves spatulate-obovate, those of the stem usually in fours, of the branches opposite. *E. B.* t. 1031.

Southern coasts of England; particularly Devonshire, Dorsetshire, Cornwall, and Glamorganshire. Jersey and Guernsey. ☉. 6, 7.

### 5. *SPEGULÁRIA* Pers. Sandwort-Spurrey.

*Sep.* 5, flattish. *Pet.* 5, ovate, entire, about as long as the calyx. *Stam.* 5—10, or fewer. *Styles* usually 3 (3—5). *Caps.* many-seeded, with entire valves fewer than the sepals or as many and alternate with them. — Named from the resemblance to the next genus.

1. *S. rúbra* St. Hil. (*Field S.*); stems prostrate, leaves narrow-linear acute plane scarcely fleshy tipped with a short bris-

tle, stipules ovate cloven, capsule as long as the calyx, seeds compressed angular roughish. *Arenaria* L.: *E. B.* t. 852. *Alsine Wahl.*

Gravelly or sandy soils, frequent. ☉. 6—9. — Much branched and spreading, *branches* often compressed upwards. *Stipules* a pair of ovate, acute, white, membranaceous *scales*, united at their base. *Flowers* numerous, in the axils of the upper leaves, solitary on rather short peduncles that are at length slightly bent back. *Sepals* obscurely 3-nerved, obtuse, and, as well as the peduncles, glandular and viscid.

2. *S. marina* Camb. (*Sea-side S.*); stems prostrate, leaves semicylindrical fleshy usually with a short point, stipules ovate cloven, capsule longer than the calyx, seeds compressed.—*α.* seeds mostly without a border, capsule a little longer than the calyx. *Arenaria rubra marina* L.—*β.* seeds mostly with a broad membranaceous striated border, capsule often twice as long as the calyx. *Arenaria media* L. *A. marina* Sm. (not *Oed.*): *E. B.* t. 958. *Alsine M. et K.*

Frequent upon the sea-coast. ♂. 6—8. — Longer and stouter in all its parts than the last, and with an almost woody root. *Stems* and *branches* compressed, except at the base. *Leaves* varying from obtuse, with or without a point, to acute on the same specimen. We are not sure this is specifically distinct from the last: our *α.* is in some measure intermediate; but although usually united with it on account of the seeds, we have brought it here, as we cannot otherwise distinguish it from *β.* Smith also joined them, but the description he gives refers almost solely to our *β.*

### 6. SPÉRGULA Linn. Spurrey.

*Sep.* 5. *Pet.* 5, as long as the calyx, ovate, entire. *Stam.* 5—10. *Styles* 5, alternate with the sepals. *Caps.* many-seeded, with entire valves opposite to the sepals. — Named from *spargo*, to scatter, from the seeds being widely dispersed.

1. *S. arvensis* L. (*Corn S.*); leaves subulate linear nearly cylindrical, stipules minute, flowers paniced, seeds slightly compressed with a narrow margin tubercled or papillose. *E. B.* t. 1535. *S. pentandra* Sm.: *E. B.* t. 1536.

Corn-fields, too frequent, especially on light stony soils. ☉. 6—8. *Stems* 6—12 inches high or more, swollen at the joints. *Leaves* 1—2 inches long, narrow, glabrous or pubescent, in two fascicles from each joint, spreading in a whorled manner. *Petals* white, rather longer than the calyx. *Stamens* often 5. *Seeds* never, we believe, quite smooth as Smith describes them in his *S. pentandra*. The true *S. pentandra* L. (*Arenaria flaccida* Roxb.) is said to have been formerly found in Ireland by Sherard; but this requires confirmation: it has perfectly smooth seeds and a very broad membranous striated border, but may be merely a variety of *S. arvensis*.



## ORD. XXXV. CRASSULACEÆ De Cand.

*Sepals* 3—20, more or less cohering at the base. *Petals* as many as the sepals sometimes cohering, inserted (as well as the stamens) at the base of the calyx (subhypogynous). *Stamens* as many as petals, or twice that number. *Ovaries* verticillated, as many as petals, each usually with a small flat scale or gland at its base, 1-celled, tapering into a stigma. *Follicles* with several seeds fixed in a double row to the ventral suture. *Albumen* fleshy thin. — Herbs or shrubs, with fleshy leaves and no stipules.

\* *Stamens as many as the petals and alternating.*

1. TILLÆA. Stamens 3-4.

\*\* *Stamens twice as many as the petals or opposite to them.*

2. COTYLEDON. Petals united into a tubular or campanulate corolla.
3. SEMPERVIVUM. Petals distinct or nearly so. Hypogynous glands lacinated, or toothed or wanting.
4. SEDUM. Petals distinct. Hypogynous glands entire or emarginate.

## 1. TILLÆA Linn. Tillæa.

*Cal.* 3—4-partite. *Pet.* distinct, acuminate. *Stam.* 3—4. *Follicles* 2-seeded, constricted in the middle. Hypogynous glands obscure or wanting. — Named after Michael Angelo Tilli, an Italian Botanist.

1. *T. muscosa* L. (*mossy T.*); stems branched and decumbent at the base, flowers axillary sessile mostly 3-cleft. *E. B. t.* 116.

On moist, barren, sandy heaths, principally in Norfolk and Suffolk, Wants and Dorsetshire. ☉. 6, 7. — A minute succulent plant, scarcely 2 inches high with small, reddish, opposite, oblong, blunt leaves. *Cal. leaves* mostly 3, bristle-pointed. *Petals* very small, almost subulate, white or tipped with rose-colour.

## 2. COTYLEDON Linn. Pennywort.

*Cal.* 5-partite. *Pet.* united into a tubular or campanulate corolla. *Stam.* 10, inserted upon the tube of the corolla. *Follicles* many-seeded, each with a scale at its base. — Named from *κοτυλη*, a cup, to which the leaves of some of the species may bear a distant resemblance.

1. *C. Umbilicus* Huds. (*Wall P.*); leaves peltate crenate depressed in the centre, stem with a (usually) simple raceme of pendulous flowers, upper bractæ minute entire, corolla scarcely cleft to the middle, lobes ovate acute erect, root tuberous. *E. B. t.* 325.

Rocks, walls, and old buildings, especially in subalpine countries.

4. 6—8. — Whole plant succulent. *Stem* from 6 inches to a foot,

high, rounded. *Leaves* mostly radical. *Flowers* cylindrical, yellowish-green.—De Candolle limits the species of *Cotyledon* to those from the Cape of Good Hope, but they only differ by the reflexed or recurved lobes of the corolla.

(*C. lutea* Huds., *E. B. t.* 1522, having erect flowers, patulous narrow and acuminate lobes to the corolla, and toothed bracteas, is from Portugal, and must have been introduced into the British Flora by mistake. It is by no means a hardy garden-plant.)

### 3. SEMPERVIVUM Linn. House-leek.

*Cal.* 6—20-cleft. *Pet.* distinct, or slightly united at the base. *Stam.* twice as many as the petals, or as many and opposite to them. *Follicles* many-seeded; hypogynous scales lacinated, toothed or none.—Name derived from *semper*, *always*, and *vivo*, *to live*; on account of its tenacity of life.

1. *S. \*tectorum* L. (*common H.*); leaves ciliated, off-sets spreading, petals about 12 entire and hairy at the margins. *E. B. t.* 1320.

House-tops and on walls. *4.* 7.—The *flowers* of this well-known and rustic medicinal plant are no less beautiful than they are curious in their structure. The number of *stamens* is in reality twice as many as the petals; of which those opposite to the petals are perfect; the rest, alternating, are small and abortive.

### 4. SÉDUM Linn. Orpine and Stonecrop.

*Cal.* in 4—6 deep segments, often resembling the leaves. *Pet.* 4—6, distinct, patent. *Stam.* 8—12. *Follicles* many-seeded, each with an entire or emarginate scale at its base.—Named from *sedo*, *to sit*; from these plants being seated on their native rocks with little or no earth.

\* *Leaves plane. Root thick.*

1. *S. Rhodiola* D C. (*Rose-root S.*); leaves obovate-oblong plane toothed glabrous, flowers (yellow) diœcious, stamens and ovaries 4, hypogynous scales emarginate as long as broad. *Rhodiola rosea L.: E. B. t.* 508.

Wet rocks, on the high mountains of the north of England and Ireland, and in Scotland; abundant; likewise on cliffs by the seashore. *4.* 6, 7.—*Root* large, woody, when dry yielding a smell that has been compared to that of *Roses*. *Stem* 6—13 inches high, simple.

2. *S. Téléphium* L. (*Live-long* or *O.*); leaves oval-oblong often cuneate at the base plane serrated, corymbs leafy dense, stems erect, flowers (purple) perfect, stamens 10. — *α.* upper leaves rounded at the base sessile. *E. B. t.* 1319. — *β.* all the leaves attenuated at the base. *S. purpurascens Link. S. purpureum Tausch.*

Borders of fields, hedge-banks, and waste places among bushes. 2. 7, 8. — *Stems* 1—2 feet high, spotted. Our British specimens, especially from the North, belong principally to *β*.

**\*\* *Leaves subterete. Flowers white or reddish.***

3. *S. dasyphyllum* L. (*thick-leaved S.*); leaves opposite (except on the flowering stems) ovato-globose gibbous fleshy, panicles glutinous, petals ovate obtuse. *E. B.* t. 656.

Walls and rocks, in several parts of England. Conway, Wales. Colinton woods near Edinburgh (scarcely indigenous). Cork. 2. 6, 7. — *Sterile stems* slender, procumbent below, slightly viscid, flowering stems also procumbent, 2—3 inches high. *Leaves* short, singularly thick and fleshy, glaucous with a reddish tinge and dotted. *Flowers* white tinged with rose-colour. *Petals and pistils* 5—8.

4. *S. Anglicum* Huds. (*English S.*); leaves mostly alternate ovate gibbous fleshy produced at the base, cymes glabrous few-flowered, petals very sharp at the point. *E. B.* t. 171.

Rocky places, especially near the sea; most abundant in North Wales, west of Scotland, and in Ireland. ☉. 6—8. — *Stems* 2—3 inches high, much branched, both flowering and sterile ones procumbent below. *Leaves* glaucous-green, often tinged with red. *Flowers* white, star-like, with purple anthers.

5. *S. \*album* L. (*white S.*); leaves scattered oblong-cylindrical obtuse spreading, cyme much branched glabrous, petals lanceolate. *E. B.* t. 1578.

Rocks, walls, and roofs of houses; in the counties of Middlesex, Worcester, Suffolk, Somerset, Warwick, and Northampton. Forfar and Glamis, Scotland. 2. 7, 8. — *Stems* prostrate below, the flowering-stem only erect, 3—5 inches high. *Leaves* pale glaucous-green, sometimes tinged with red. *Flowers* crowded, white or tinged with rose-colour.

6. *S. villósum* L. (*hairy S.*); leaves scattered oblong flattened above, and as well as the peduncles and erect stems hairy and viscid, petals ovate acute. *E. B.* t. 394.

Stony and moist places by the sides of rills; frequent in the N. of England, and Scotland, especially the subalpine parts. ♂? 6, 7. — *Stem* 3—4 inches high, reddish-purple. *Leaves* on the short barren shoots, almost exactly cylindrical. *Flowers* few, of a pale rose-colour.

**\*\*\* *Leaves subterete. Flowers yellow.***

7. *S. acre* L. (*biting S.*, or *Wall-pepper*); leaves erect alternate ovate gibbous fleshy produced at the base, cymes trifid glabrous leafy, sepals obtuse gibbous at the base, petals acute. *E. B.* t. 839.

Walls, rocks, and sandy ground, frequent. 2. 6, 7. — Distinguished among our yellow-coloured species, by its upright, short and very succulent leaves, closely imbricated on the barren shoots. Very biting when chewed, and hence its name of *Wall-pepper*.

8. *S. \*sexanguläre* L. (*tasteless yellow S.*); leaves generally in 6 rows whorled on the barren shoots cylindrical fleshy spreading produced at the base, cymes trifid glabrous, sepals lanceolate acute not gibbous, petals acute. *E. B.* t. 1946.

Old walls in the east of England, rare. Isle of Sheppey; Greenwich Park; in Cambridgeshire and Old Sarum. 4. 7. — Well distinguished from the last by its spreading, larger and slender leaves, and by their insertion.

9. *S. \*reflexum* L. (*crooked yellow S.*); leaves terete awl-shaped scattered spurred at the base, flowers cymose, segments of the calyx lanceolate slightly acute. *E. B.* t. 695. — *S. glaucum* Donn. *E. B.* t. 2477.

Walls, roofs of houses and thatched buildings, frequent. 4. 7, 8. — Sterile branches with thickly placed leaves, often reflexed. Flowering-stems 6—8 inches high. Cyme large, yellow. Flowers numerous, often with 6 petals and 12 stamens. Very similar to the two following species.\* If the true *S. glaucum* be distinct from this, even as a variety, it has not come under our observation: it is said to grow on rough hills near Mildenhall, Suffolk, and Sunday's Well and Glaskeen, Ireland.

10. *S. rupëstre* L. (*St. Vincent's-Rock S.*); leaves linear-lanceolate flattened glaucous produced at the base, those of the sterile branches closely imbricated appressed, flowers cymose, segments of the calyx elliptical obtuse. *E. B.* t. 170.

St. Vincent and Cheddar rocks, Somersetshire. Barmouth, Tremadock, and Ormeshead, Wales. Walls about Darlington, Yorkshire. 4. 6, 7. — Too near, we fear, to the last: we cannot perceive the difference in size pointed out by Mr. Newman in *Phytol.* iii. p. 77.

11. *S. Forsterianum* Sm. (*Welsh Rock S.*); leaves lanceolate flattened produced at the base, those of the sterile branches spreading in many rows, flowers cymose, segments of the calyx elliptical obtuse. *E. B.* t. 1802.

Rocks in the spray of water-falls, Wales. Rhydoll, Cardiganshire; Barmouth; Hisväe, valley of Nant-phrancon; Little Ormeshead. Caer-Caradoc, Shropshire. 4. 6, 7. — This seems only to differ from the last by the leaves on the sterile branches spreading and forming small rose-like tufts; a character, in our opinion, not of primary importance.

#### ORD. XXXVI. GROSSULARIACEÆ *De Cand.*

*Calyx* 4—5-cleft, the tube entirely or in part adnate with the ovary. *Petals* 4—5, small, placed at the mouth of the tube alternately with the 4—5 short *stamens*. *Ovary* 1-celled, with two opposite parietal placentas which are sometimes projected into the interior and resemble dissepiments. *Ovules* many. *Style* 2—4-cleft. *Berry* crowned with the remains of the calyx.

*Seeds* suspended by long stalks among the pulp. *Albumen* horny. — Shrubs, often spiny, of temperate climates, with alternate lobed leaves.

1. *RIBES* Linn. Currant and Gooseberry.

*Petals* small, scale-like. *Stam.* included or nearly so. (*Style* erect, and *ovary* with nerve-like *placentas* in all the British species.) — Name: — *Ribes* was a word applied by the Arabian physicians to a species of *Rhubarb*, *Rheum Ribes*; our older Botanists believed that it was our *gooseberry*, and hence Bauhin called that plant *Ribes acidum*.

\* *Flowers* racemose or spicate. *Spines* none.

1. *R. rubrum* L. (common or red *C.*); flowers perfect, leaves bluntly 5-lobed, bracteas very small, calyx nearly plane and ovary glabrous, petals obtuse. —  $\alpha$ . racemes glabrous pendulous. *E. B. t.* 1289. —  $\beta$ . racemes slightly downy, erect in flower, pendulous in fruit. *R. petraeum* Sm. (not Wulf.): *E. B. t.* 705. —  $\gamma$ . racemes spicate, erect in flower and fruit. *R. spicatum* Robs.: *E. B. t.* 1290.

Woods and hedges, but scarcely wild. —  $\beta$ . N. of England, and in Scotland. —  $\gamma$ . Near Richmond, Yorkshire.  $\mathcal{L}$ . 4, 5. — *Leaves* doubly serrated, on longish stalks. Limb of the *calyx* shorter than the spreading roundish segments. *Petals* distinct from each other, cuneiform-orbicular. *Stamens* inserted into the throat of the calyx; *anthers* reniform. *Style* cylindrical; *stigmas* subglobose.

2. *R. alpinum* L. (tasteless Mountain *C.*); diœcious, branches angled, leaves shining beneath, racemes glandular erect both in flower and fruit, flowers shorter than the bracteas, limb of the calyx nearly plane. *E. B. t.* 704.

Woods, in the N. of England. Scarcely wild in Scotland.  $\mathcal{L}$ . 4, 5. — *Leaves* small, frequently 3-lobed; lobes acute, deeply serrated. *Racemes* with a few small flowers. *Cal.* limb nearly flat, shorter than the spreading segments. *Petals* distant. *Stamens* inserted into the throat of the calyx. *Style* cylindrical, bifid at the apex; *stigmas* subglobose. *Berries* red, few-seeded.

3. *R. nigrum* L. (black *C.*); flowers perfect, leaves dotted with glands beneath, racemes lax downy pendulous with a separate simple flower-stalk at their base, limb of the calyx campanulate pubescent. *E. B. t.* 1291.

Woods and river-sides, in various situations, but probably introduced.  $\mathcal{L}$ . 4, 5. — *Inflorescence* glandular. Segments of the *calyx* revolute, as long as the tubular portion of its limb. *Petals* imbricated at the margins. *Stamens* inserted upon the tube; *anthers* cordate-oblong, apiculate. *Ovary* half-superior. *Style* almost entire; *stigmas* somewhat reniform. *Berries* the largest of our *Currants*, black, much esteemed medicinally and for making jelly. \*

\*\* Peduncles 1—3-flowered. Stems spiny.

4. *R. Grossulária* L. (common *G.*); leaves rounded and lobed peduncles short hairy 1—3-flowered with a pair of minute bracteas. *E. B. t.* 1292. *R. Uva-crispa* L.: *E. B. t.* 2057.

Hedges and thickets, but scarcely indigenous. *h.* 4, 5. — Branches not setose. Thorns immediately beneath a fascicle of leaves, solitary or 2—3 combined at the base, spreading. Limb of the calyx campanulate, about as long as the reflexed segments. Petals ovate, distant, half as long as the stamens. Stamens inserted into the bearded throat of the calyx, and shorter than the segments. Style cleft to the middle, below which it is very hairy; stigmas minute, truncated.

### ORD. XXXVII. SAXIFRAGACEÆ Juss.

*Calyx* of 4—5 sepals, or united into a tube which is wholly or in part adnate with the ovary. *Petals* 4—5, or 0. *Stamens* 5—10, distinct, perigynous or somewhat hypogynous. *Ovary* with usually two diverging persistent styles, 2-celled with an axile placenta, or 1-celled with parietal placentas. *Capsule* 2-valved. *Seeds* numerous. *Albumen* fleshy. — Small, mostly herbaceous plants, frequent in northern and alpine regions.

1. SAXIFRAGA. Petals 5, ovary 2-celled.

2. CHRYSOSPLENIUM. Petals 0, ovary 1-celled.

#### 1. SAXIFRAGA Linn. Saxifrage.

*Cal.* superior, or inferior, or half-inferior, in 5 segments. *Pet.* 5. *Stam.* 10 or sometimes 5. *Ovary* 2-celled. *Caps.* with 2 beaks, 2-celled, many-seeded. — Named from *saxum*, a stone, and *frango*, to break; in allusion to the supposed medicinal virtues of this plant; or, perhaps, to its roots penetrating the crevices of rocks, among which the different species generally grow.

\* Flowering-stems erect, leafless. Flowers panicled. *Cal.* usually reflexed. *Caps.* superior or nearly so.

† Filaments enlarged upwards.

1. *S. Géum* L. (Kidney-shaped *S.*); leaves rotundate-reniform crenate or sharply toothed, footstalks hairy linear convex beneath channelled above, scape panicled, capsules superior. —  $\alpha$ . leaves hairy on both sides. *E. B. S. t.* 2893. —  $\beta$ . leaves glabrous on both sides. *E. B. t.* 1561.

Mountains in the south of Ireland. *h.* 6. — This species has the margin of the teeth cartilaginous, but less so than the following. Its type has the leaves hairy and sharply toothed; but they vary much in these respects and in size. Between this and the next there

are several hybrids about Killarney, two of which may be noticed. — 1. *S. elegans* Mackay (*E. B. S. t.* 2892.), leaves round and approaching in form to *S. Geum*, but with the petioles shorter and broader, and although convex beneath, it is flat above as in *S. umbrosa*. — Turk mountain. — 2. *S. hirsuta* L. (*E. B. t.* 2322.); leaves deep green slightly hairy oval longer than broad scarcely cordate at base, and the petiole as in *S. Geum*. Gap of Dunloe.

2. *S. umbrósa* L. (*London-Pride*, or *None-so-pretty*); leaves roundish oval with cartilaginous crenatures sharp teeth or serratures tapering gradually into a broad flat footstalk, scape paniced, capsule superior. —  $\alpha$ . leaves obovate-oblong crenate or toothed spreading. *E. B. t.* 663. —  $\beta$ . leaves roundish sharply toothed erect. *S. punctata* Haw. (not L.) —  $\gamma$ . leaves oblong-ovate erect with deep tooth-like serratures. *E. B. S. t.* 2891.

Plentiful on mountains in south and west of Ireland: Woods at Wetherby, and in Craven, Yorkshire, and about Edinburgh and Glasgow, but not really wild.  $\mathcal{U}$ . 6. — Well known in our gardens, even amid the smoke of London; hence and in consequence of its beautifully spotted flower, it is called with us London-pride, in Ireland *St. Patrick's Cabbage*. The type of this species has the leaves glabrous, longer than broad, with the teeth either blunt, or short and acute; in  $\gamma$ . the teeth are long, and in  $\beta$ . the leaves are often as short as in *S. Geum*, but it does not appear to be a hybrid.

†† *Filaments subulate*.

3. *S. stelláris* L. (*starry S.*); leaves oblong-cuneiform scarcely stalked, panicle subcorymbose of few flowers, capsule superior. —  $\alpha$ . leaves angulate-serrate. *E. B. t.* 167. —  $\beta$ . leaves quite entire.

Sides of rivulets and wet rocks, in the mountainous parts of the north of England, Scotland, and Ireland. —  $\beta$ . rocks on Ben Nevis.

\*\* *Flowering-stem erect. Leaves not lobed. Flowers capitate. Cal. spreading. Caps.  $\frac{1}{2}$ -inferior.*

4. *S. nivólis* L. (*alpine clustered S.*); leaves obovate subpetiolate acutely crenate subcoriaceous, scape terminated by a dense cluster of flowers. *E. B. t.* 440.

Mountains of Wales, and frequent in the rocky clefts of the Highland mountains of Scotland.  $\mathcal{U}$ . 7, 8. — *Leaves* subcoriaceous, glabrous above. *Scape* glandulose-pubescent, sometimes a little branched.

5. *S. Andréwsi* Harv. (*Andrews' S.*); leaves spreading spatulate obtuse glabrous thickish narrowed into the slightly ciliated petiole crenated with a thin membranaceous margin, scape paniced. *Lond. Journ. Bot.* vii. p. 570. t. 19.

Moist cliffs, on a mountain at the extreme termination of Glen Caragh, Kerry. *W. Andrews, Esq.*  $\mathcal{U}$ . 6. — Of this we know nothing, except from a single garden specimen, and have therefore abridged Dr. Harvey's specific character; the *filaments* are subulate, not dilated

*Saxifraga.*] XXXVII. SAXIFRAGACEÆ.

upwards; the *ovary* is only half-superior, and the *sepals* are not flexed, although recurvo-patent. It has been conjectured by some to be a monstrous form of *S. umbrosa*; but if these characters be constant, it must be more allied to *L. Virginensis* Mich. and *S. nivali* than to any other species.

\*\*\* *Stems all procumbent and leafy. Leaves undivided.*

6. *S. oppositifolia* L. (*purple Mountain S.*); leaves ovate opposite imbricated ciliated, flowers solitary terminal. *E. B. t. 1*

Moist alpine rocks. Ingleborough. Snowdon and other Welsh mountains. Frequent on the Highland mountains of Scotland. 24. 4, 5. — Grows in straggling tufts, with a habit quite different from that of any other British *Saxifraga*. Flowers large in proportion to the size of the plant, purple, very beautiful. The leaves are retuse ciliated, and have a pore at the extremity. Capsule half-inferior.

\*\*\*\* *Flowering-stem leafy, erect or spreading. Leaves all entire*

7. *S. Hirculus* L. (*yellow Marsh S.*); stem erect, leaves alternate lanceolate, those from the root attenuated into a petiole; calyx inferior at length reflexed obtuse downy at the margin as well as the upper part of the stem. *E. B. t. 1009.*

Wet moors, very rare. Knutsford, Cheshire; Cothelstone-fel Yorkshire; moor, south of Langton Lees Farm-house, Berwickshire plentiful. Queen's County, Ireland. 24. 8. — Flowers yellow large, solitary. Petals almost elliptical.

8. *S. aizoides* L. (*yellow Mountain S.*); lower leaves of the stem numerous crowded, the rest scattered linear-lanceolate fleshy more or less ciliated, stem branched ascending, calyx spreading, capsule half-superior. *E. B. t. 39.*

Abundant near alpine rills, and in springy places, in mountainous countries; north of England, Wales, Scotland, and Ireland. 24. 6—9. — Stem 5—7 inches high, branching below. Flowers panicle subcorymbose, bright yellow; each petal beautifully spotted with orange.

\*\*\*\* *Flowering-stems erect or spreading, more or less leafy. Leaves (some or all) lobed. Calyx spreading.*

9. *S. granulata* L. (*white Meadow S.*); radical leaves reniform on long foot-stalks obtusely lobed, those of the upper part of the stem nearly sessile acutely lobed, stem panicle, root granulated, capsule partly inferior. *E. B. t. 500.*

Hedge-banks, meadows and pastures, especially on a gravelly soil. In many parts of the south and middle of Scotland, but scarcely known in the Highlands. Between Beldoyle and Portunarnock Ireland. 24. 5, 6. — Root consisting of numerous, small, clustered tubers. Stem 8—12 inches high, glandulose-pilose. Leaves mostly radical, glabrous; petioles glandular. Flowers large, white.

10. *S. cernua* L. (*drooping bulbous S.*); radical leaves reni-



form on long foot-stalks palmate-lobate, superior ones nearly sessile subtrifid, stem bulbiferous usually simple with one terminal flower, capsule superior. *E. B. t.* 664.

Rocks (not about rills), on the summit of Ben Lawers (now almost extinct). *4.* 8. — *Stem* 3—4 or 5 inches high, slender. *Leaves* glabrous, and the *stem*, which droops at the extremity, nearly so. In the axils of the small upper *leaves* are clusters of minute reddish *bulbs*. We have never seen native specimens of this in flower or fruit.

11. *S. rivularis* L. (*alpine Brook S.*); leaves 3—5-lobed palmated glabrous on long stalks, stem slender branched pubescent, branches few-flowered, bracteas oblong sessile 3-lobed and entire, capsule half-inferior. *E. B. t.* 2276.

Moist alpine rocks in Scotland, rare. Near the summit of Ben Nevis, and Ben Lawers, but very scarce. Plentiful on Loch-na-gar, Aberdeenshire. *4.*

12. *S. tridactylites* L. (*Rue-leaved S.*); glandular and viscid, leaves cuneate 3—5-fid, the uppermost bracteas undivided, stem paniced, pedicels single-flowered, capsule inferior. *E. B. t.* 501.

Common on walls and dry barren ground, in England and the Lowlands of Scotland; rare however in the west of Scotland, and especially in the Highlands. ☉. 4—7. — *Stem* 2—4 inches high. Whole plant covered with viscid *hairs*. *Petals* small, pure white, scarcely longer than the *segments* of the *calyx*. *Capsule* almost wholly inferior.

13. *S. hypnoides* L. (*mossy S.*); sterile shoots usually procumbent and elongated, root-leaves 3-cleft, those of the shoots undivided or 3-cleft bristle-pointed or acute and more or less fringed, segments of the calyx pointed. — *a.* leaves of the procumbent shoots mostly undivided and narrow bristle-pointed, petals obovate. *E. B. t.* 454. *S. leptophylla Pers.* — *β.* lobes of the leaves rather narrow bristle-pointed, petals roundish obovate. *S. platypetala E. B. t.* 2276. — *γ.* leaves of shoots mostly 3-lobed, lobes narrow bristle-pointed, petals obovate. *S. lætevirens Don.* *S. denudata Don.* *S. affinis Don: E. B. S. t.* 2903. — *δ.* lobes of the leaves broader acute or bristle-pointed, petals obovate. *S. elongella Sm.: E. B. t.* 2277. *S. hirta Donn: E. B. t.* 2291.

Frequent in rocky mountainous situations in England, Scotland, and Ireland. *4.* 5—7. — An abundant and very variable plant. We do not attempt to assign precise localities, characters or even synonyms to any of these varieties, because with some we are only acquainted in a state of cultivation, and then they not only change their appearance according to the soil, but pass into each other. We hesitate whether to refer *S. incurvifolia* of Don here or to the next, one cultivated specimen having the lobes of the leaves mucronated, and another quite obtuse, yet not otherwise distinguishable.

14. *S. caspitosa* L.? (*tufted alpine S.*); sterile shoots usually very short or wanting, root-leaves crowded fringed 3—5-cleft with obtuse lobes lowermost sometimes undivided, calyx-segments obtuse, fruit hemispherical. —  $\alpha$ . smaller, without sterile shoots. *E. B. t.* 794. —  $\beta$ . larger. *S. decipiens Ehrh.* *S. palmata Sm. : E. B. t.* 455. *S. incurvifolia Don : E. B. S. t.* 2909.

Mountains, rare. Rocks of Twll dŷ, and Cwm-Idwell, N. Wales. Brandon, co. Kerry. Ben-na-bourd, Aberdeenshire; Ben Nevis. 4. 5—7. — On a careful reconsideration of the species, we fear that the British one is only a variety of the last with obtuse lobes to the leaves. In the Lapland, Norway, and Arctic American plants (see *Gunner Norv. ii. t. 7. f. 1, 3, 4*, which is also *S. Grœnlandica* L.) the calyx when in fruit is of a different form; and the leaves, which are almost glabrous on the surface, are never ciliated with short glandular hairs: but if Wahlenberg be correct in stating that it has sometimes procumbent shoots, it may be the same. The *S. Grœnlandica* Lap. (probably Dillen. *Elth. t. 253. f. 329*) forms dense cushions several inches thick with erect rosulate shoots, and is quite different from any form of the Linnæan plant we have seen.

15. *S. \*muscoïdes* Wulf. (*mossy alpine S.*); sterile shoots very short erect, radical leaves crowded linear obtuse entire and trifid, stem nearly naked few-flowered, petals oblong obtuse (buff-coloured) a little longer than the superior calyx. *E. B. t.* 2314.

Mountains above Ambleside, Westmoreland? *Huds.* Highlands of Scotland? 4. 5. — A very dubious native, the only authority being cultivated plants said to have been originally brought from Scotland: the plant from Westmoreland is supposed to have been *S. hypnoides*.

16. *S. \*geranoides* L. (*Geranium S.*); sterile shoots short, leaves glandular pubescent thickish scarcely rigid, lower ones and those of the shoots upon very long foot-stalks deeply 3-cleft, the segments usually 3-lobed and incise sometimes 2-lobed or entire, lobes acute, panicle cymose, segments of the superior calyx linear or linear-lanceolate longer than the germen. *S. pedatifida Ehrh. : E. B. t.* 2278.

Said to have been found in the "Scottish mountains" by *Mr. J. T. Mackay*; and on "rocks near the head of Clova, Angusshire," by *Mr. G. Don*. 4. 6, 7. — There must be some mistake as to the supposed discovery of this plant in Scotland, a mistake the more probable from its being supposed distinct from *S. geranoides*. The precise form called *S. pedatifida* has never, we believe, been found in a wild state: Don's plant we have collected from his own garden; and of it we can truly say that it does not agree quite so well with the figure in *E. Bot.*, as do specimens cultivated under the older name. The divisions of the calyx vary in breadth as well as in their proportion to the length of the styles in our wild specimens

from the Pyrenees, where alone this species has been met with, unless *S. trigynum* from Caucasus prove to be a variety.

2. *CHRYSOSPLENIUM* Linn. Golden-Saxifrage.

*Cal.* superior, 4—5-cleft, somewhat coloured. *Cor.* 0. *Stam.* 8—10. *Ovary* 1-celled. *Capsule* 1-celled with 2 beaks, many-seeded. — Named from χρυσος, gold, and σπλην, the spleen, or a medicine for the spleen; a disease, for which this plant was supposed to be a cure.

1. *C. alternifolium* L. (*alternate-leaved G.*) ; leaves alternate, lower ones subreniform upon very long footstalks. *E. B. t.* 54.

Boggy places among rocks and springs, rather rare in England, more frequent in Scotland. Near Belfast, Ireland. *fl.* 4—6. — *Stem* 4—5 inches high, branched near the summit. *Leaves* petiolate, crenate. *Flowers* in small umbels, deep yellow, mostly with 8 stamens.

2. *C. oppositifolium* L. (*common G.*) ; leaves opposite cordate-rotundate. *E. B. t.* 490.

Sides of rivulets in shady places, common. Abundant near the source of rivulets in very alpine situations, in the Highlands. *fl.* 4—7. — Generally more branched at the base than the last, of a paler colour in all its parts. *Stamens* usually 8.

ORD. XXXVIII. UMBELLIFERÆ<sup>1</sup> Juss.

(See Tabs. I.—III.)

*Calyx* adherent with the *ovary*, 5-toothed; teeth minute, often obsolete. *Corolla* of 5 petals, sometimes very unequal, the outer ones the largest. *Stamens* 5, alternate with the petals, inserted on the under side of a thick fleshy disk, at the base of the styles. *Styles* 2. *Achenes* or *carpels* 2, combined, attached near the apex to a central axis, usually separating when ripe. *Seed* solitary, pendulous. *Embryo* minute, in the base of a horny *albumen*. — Herbs. *Leaves* alternate, generally compound

<sup>1</sup> In this extensive, important and perfectly natural group, the genera which compose it are with difficulty distinguished the one from the other. The parts on which the marks of distinction depend are minute; and in vain will the student hope to make himself master of the subject without devoting his earnest attention to it, and carefully examining the structure of the flowers, and more especially of the fruit. This latter consists of two single-seeded indehiscent *pericarps*, or *carpels*, as they may be conveniently called, eventually separating, each with its style, and for a time suspended by a central, filiform, and generally bipartite *axis*, or *carpopophore* (Tab. I. f. 11. a., and Tab. III. f. 33. a.). They are variously shaped, and marked with longitudinal *ribs* or *ridges*. The number of these ribs upon each *carpel* is five (Tab. I. f. 6. a. b., &c.), more or less apparent, sometimes obliterated. Within the coat of the carpels, generally in the *interstices* between the ribs, are often longitudinal ducts, or canals, called *vittæ* (Tab. I. f. 13. b.), replete with an oily or resinous substance, and usually coloured; so that they are sometimes visible without dissection. (Tab. II. f. 27. a. b.) The *albumen* is either *furrowed* (Tab. III. f. 34. c., 36. b., &c.), or *involute* on its inner face or suture (Tab. III. f. 32. b., 33. b., 38., &c.), or neither, when it is said to be *solid* (Tab. I. f. 4. b.; 5. c., &c.).

and embracing the stem with their sheathing bases. Flowers in umbels. — This Order contains many poisonous plants, especially such species as grow in watery places; numerous esculent and aromatic ones, usually inhabiting dry situations. Several yield gum-resins; as *Assafœtida*, *Galbanum*, and *Ammoniac*, but the plants themselves are not well ascertained.

### I. Umbels simple or imperfectly compound.<sup>1</sup>

\* *Vittæ 0. Albumen solid.*

1. HYDROCOTYLE. Fruit flat, of two nearly orbicular carpels, naked. Calyx-teeth obsolete.
2. SANICULA. Fruit roundish, without ribs, densely clothed with hooked prickles. Calyx-teeth leafy.
- 2a. ASTRANTIA. Fruit roundish, with plicate-dentate ribs. Calyx-teeth leafy.
3. ERYNGIUM. Fruit roundish, without ribs, densely clothed with chaffy scales. Calyx-teeth leafy.

\*\* *Fruit with vittæ. Albumen furrowed or involute at the suture.*

### 39. TORILIS.

### II. Umbels compound or perfect.

1. (A—F.) *Fruit not prickly.*

\* *Albumen solid.*

A. *Fruit laterally compressed.*

† *Leaves compound.*

‡ *Calyx-teeth foliaceous.*

4. CICUTA. Fruit roundish-cordate.

‡‡ *Calyx-teeth small or obsolete. Petals entire, with a straight or inflexed point.*

5. APIUM. Involucel 0. Fruit didymous; carpels with single vittæ between the ribs.

6. PETROSELINUM. Involucel many-leaved. Fruit ovate: carpels with single vittæ between the ribs; carpophore bipartite.

8. HELOSCIADIUM. Involucel many-leaved. Fruit ovate or oblong: carpels with single vittæ between the ribs; carpophore entire.

7. TRINIA. Carpels with single vittæ beneath each rib. Flowers diœcious.

‡‡‡ *Calyx-teeth small or obsolete. Petals obcordate or emarginate, with an inflexed point.*

|| *Fruit with single short clavate vittæ between the ribs.*

9. SISON. Fruit ovate.

<sup>1</sup> The fruits of all the genera are represented in Tabs. I.—III., the numbers of the genera indicating the figures in these plates.

# XXXVIII. UMBELLIFERÆ.

||| Vittæ 0.

10. *EGORODIUM*. Fruit oblong.

||| Vittæ elongated, linear.

11. *CARUM*. Fruit oblong: vittæ single between the ribs.

12. *BUNIUM*. Fruit oblong: vittæ 2—3 between the obtuse ribs: suture without vittæ.

13. *PIMPINELLA*. Fruit ovate: vittæ 3 or more between the slender ribs: suture with vittæ. Styles with a swollen base.

14. *SIUM*. Fruit ovate or globose: vittæ 3 or more between the obtuse ribs: suture with vittæ. Styles with a depressed base.

†† Leaves simple (reduced to the petiole).

15. *BUPLEURUM*. Calyx-teeth obsolete. Petals roundish entire, with an involute broad point. Fruit ovate-oblong.

B. Fruit ovate or elliptical, rounded or slightly dorsally compressed; carpels separating, with vittæ.

† Vittæ single between the ribs.

16. *ENANTHE*. Styles long, erect. Carpels with blunt ribs and single vittæ between them.

17. *ÆTHUSA*. Styles short. Fruit shortly ovate. Involucre few-leaved. Petals obcordate.

18. *FENICULUM*. Styles short. Fruit oblong. Involucre 0. Petals entire.

19. *SESELI*. Styles long, reflexed. Fruit ovate. Involucre many-leaved. Petals obcordate.

†† Vittæ 2 or more between the ribs. (Involucre many-leaved.)

‡ Seeds without vittæ, cohering with the carpels.

20. *LIGUSTICUM*. Petals obcordate, with an inflexed point, shortly clawed.

21. *SILAU*. Petals obovate or emarginate, with an inflexed point, sessile or with an appendage at the base.

22. *MEUM*. Petals entire, elliptical, with an incurved point

‡† Seeds with many vittæ, loose from the carpel.

23. *CRITHMUM*. Petals roundish, entire, involute.

C. Fruit much and dorsally compressed.

24. *ANGELICA*. Fruit with 2 wings on each side: ribs equidistant; lateral ones expanding into the wings.

25. *PEUCEDANUM*. Fruit with one even wing on each side: ribs equidistant; lateral ones obsolete close to the wings: vittæ filiform. Petals with an inflexed point.

26. *PASTINACA*. Fruit with one even wing on each side: lateral ribs distant, upon the wings: vittæ filiform. Petals involute.

27. *HERACLEUM*. Fruit with one even wing on each side: lateral ribs distant, upon the wings: vittæ clavate, short. Petals with an inflexed point.

28. *TORDYLIUM*. Fruit with one wing on each side which is thick and crenated at the margin.

D. Fruit globose ; carpels scarcely separating.

29. CORIANDRUM. Vittæ none.

\*\* Albumen furrowed or involute at the suture.

E. Fruit short, turgid, slightly compressed laterally.

30. CONIUM. Vittæ 0 between the waved crenated ribs. Albumen furrowed.

31. PHYSOSPERMUM. Vittæ single between the filiform ribs. Albumen furrowed.

32. SMYRNIUM. Vittæ several between the ribs. Albumen involute.

F. Fruit oblong.

† Fruit with a conspicuous beak. Vittæ none.

33. SCANDIX. Beak very long ; carpels with 5 obtuse ribs.

34. ANTHRISCU. Beak rather short : carpels without ribs.

†† Fruit with a very short beak, or without one.

35. CLEROPHYLLUM. Carpels obtusely 5-ribbed, with single vittæ between the ribs.

36. MYRRHUS. Carpels sharply 5-ribbed, without vittæ.

2. (G.) Fruit prickly, or with a prickly involucre.

† Carpels with 3 dorsal primary bristly ribs, and prickles between them.

37. DAUCUS. Albumen solid. Fruit dorsally compressed, with prominent ribs.

38. CAUCALIS. Albumen involute at the suture. Fruit slightly compressed laterally, with prominent (secondary) ribs.

39. TORILIS. Albumen furrowed. Fruit slightly compressed laterally, without evident ribs.

†† Carpels each with 5 dorsal depressed smooth ribs. Involucre prickly.

40. ECHINOPHORA. Albumen involute.

I. Umbels simple or imperfectly compound. Fruit without vittæ. Albumen solid. (Gen. 1—3.)

\* Fruit laterally compressed.

1. HYDROCÓTYLE Linn. White-rot. (Tab. I. f. 1.)

Fruit of 2 flat orbicular carpels, each with 5, more or less distinct, filiform ribs. *Cal.-teeth* obsolete. *Pet.* ovate (*Leaves simple*).—Named from ὕδωρ, *water*, and κορυλή, a *cup* or *vase*, the common species growing in wet places and having orbicular leaves depressed in the middle and stalked in the centre.

1. *H. vulgaris* L. (*common W. or Marsh-Pennywort*) ; leaves peltate orbicular somewhat lobed and crenate, heads of about 5 flowers. *E. B.* t. 751.

Bogs, marshes, and banks of lakes, frequent. 4. 5—8. — *Stems* creeping, producing from their joints petiolated leaves and simple flower-stalks, which are much shorter than the petioles. *Flowers* often with a reddish tinge. *Fruit* emarginate at the base.

\*\* *Transverse section of fruit nearly round.*

2. *SANÍCULA* Linn. Sanicle. (Tab. I. f. 2.)

*Fruit* ovate, densely clothed with hooked prickles. *Cal.-teeth* leafy. *Pet.* erect, obovate, with long inflected points. (*Some flowers abortive.*)—Name derived from *sano*, to heal; because this plant was once supposed "to make whole and sound all inward hurts and outward wounds."

1. *S. Europæa* L. (*Wood S.*); lower leaves palmate with the lobes trifid incise-serrate, fertile flowers all sessile. *E. B. t.* 98.

Woods and thickets, frequent. 4. 6, 7. — *Leaves* mostly radical, finely serrated, almost ciliated. *Heads of flowers* small, white; there are often sterile flowers which are shortly stalked.

(*Astrantia major* L., observed in one or two places, has no claim to be considered a native.)

3. *ERÝNGIUM* Linn. Eryngo. (Tab. I. f. 3.)

*Fruit* ovate, clothed with chaffy scales or bristles. *Cal.-teeth* leafy. *Pet.* erect, oblong, with long inflected points. (*Involucre of many leaves. Flowers in a compact head upon a scaly receptacle.*)—Name: *ερυγγιον* of Dioscorides.

1. *E. maritimum* L. (*Sea E. or Sea-Holly*); radical leaves roundish plaited spinous stalked, upper ones lobed palmate amplexicaul rigid, involueral leaves 3-lobed longer than the heads, scales of the receptacle 3-cleft. *E. B. t.* 718.

Sandy shores of England, frequent. Scotland, chiefly on the west coast. 4. 7, 8. — Whole plant stiff and rigid, glaucous. *Leaves* and *involucres* beautifully veiny. *Flowers* blue, in dense heads, not having at first sight the appearance of those of this Order. The roots are well tasted, when candied, and have been considered stimulating and restorative.

2. *E. \*campéstre* L. (*Field E.*); radical leaves subternate, lobes pinnatifid, cauline ones bipinnatifid amplexicaul all with spinous teeth, involueral leaves lanceolate spinous longer than the heads, scales of the receptacle undivided. *E. B. t.* 57.

Very rare. Devn's Point, Stonehouse, near Plymouth\* (now nearly extinct); near Daventry (extinct); at the eastern extremity of Jarrow ballast-hills, and at Salt-meadows, near Friar's Goose, on the Durham side of the Tyne. Sandy fields near Lismore, Waterford, Ireland. 4. 7, 8.

II. *Umbels usually compound or perfect.* (Gen. 4—40.)

A. *Fruit not prickly nor beaked, laterally compressed. Albumen solid.* (Gen. 4—15.)

4. *CicUTA* Linn. Water-Hemlock. (Tab. I. f. 4.)

*Fruit* of 2 almost globose lobes or *carpels*, with 5 broad flattened ribs, and evident single *vittæ* between them. *Cal.-teeth* leafy. *Pet.* obcordate. (Partial involucre of *many leaves*.) — Name: *Cicuta* was a term given by the Latins to those spaces between the joints of a reed of which their pipes were made; and the stem of this plant is equally formed of hollow internodes.

1. *C. virôsa* L. (*Cowbane* or *W.*); fibres of the root slender *E. B.* t. 479.

In ditches, and about the margins of rivers and lakes, in England and the Lowlands of Scotland; but not very frequent. *Ź.* 6—8. — *Stem* 3—4 feet high, hollow, branched. *Leaves* biternate, the radical ones pinnate: *leaflets* lanceolate, serrated. *Umbels* pedunculate. — A deadly poison to man: cattle have been said, perhaps erroneously, to eat the leaves with impunity, for Linnaeus (*Lach. Lap.* II. p. 136.) held a quite different opinion.

5. *A'PIUM* Linn. Celery. (Tab. I. f. 5.)

*Flowers* perfect. *Fruit* roundish-ovate, didymous; *carpels* with 5 slender ribs, with single *vittæ* between them and two on the suture: *Carpophore* entire. *Cal.-teeth* obsolete. *Pet.* roundish entire, with a small involute or inflexed point (*Involucres* 0.) — Name from *ap*, *ab*, or *av*, meaning *water* in various ancient languages, the plant growing in such places.

1. *A. graveolens* L. (*Smallage* or *wild C.*); point of petals involute. *E. B.* t. 1210.

Marshy places, especially near the sea; not unfrequent in England. *Musselburgh*, Scotland. *Ź.* 6—8. — *Stem* furrowed, 2 feet high. *Leaves* glabrous, pinnate or ternate; *leaflets* of the upper leaves wedge-shaped, lobed and cut at the extremity; the lower leaves are upon long stalks with their leaflets rounder and truncate at the base. *Umbels* often sessile; peduncled ones of few *flowers*. — Origin of our garden Celery.

6. *PETROSELINUM* Hoffm. Parsley. (Tab. I. f. 6.)

*Fruit* ovate. *Carpels* with 5 slender ribs, and *vittæ* in the interstices; *carpophore* bipartite. *Cal.-teeth* obsolete. *Pet.* roundish, with a narrow incurved point. (*Involucre of few, partial of many, leaves*.) — Name: *περπος*, a stone; being a native of rocky or stony places.



1. *P. sativum* Hoffm. (common *P.*); leaves tripinnate shining, lower leaflets ovate-cuneate trifid and toothed, upper ones ternate lanceolate nearly entire, partial involucre filiform. *E. B. S.* t. 2793. *Apium Petroselinum* L.

Frequent on old walls, especially in the south-west of England. Blarney Castle, near Cork. ♂. 6—8.

2. *P. ségetum* Koch (Corn *P.*); radical leaves pinnated, leaflets nearly sessile ovate lobed cut and serrated, upper leaves with 1—3 linear leaflets, rays of the umbels few and unequal. *Sison* L.: *E. B.* t. 228.

Moist fields, chiefly on calcareous soils, in several parts of the middle and south of England. Sea-shore, between Hognor and Little Hampton; and between Esher and West Moulsey, Surrey. Isle of Wight. ♂. 8, 9. — Stem 1 foot to 1½ high, wiry, spreading, branched. *Universal involucre* of about 2 leaves. *Fruit* strongly ribbed.

#### 7. *TRINIA* Hoffm. Honewort. (Tab. I. f. 7.)

Diœcious. *Fruit* ovate. *Carpels* with 5 prominent ribs, and single *vittæ* beneath them. *Cal-teeth* obsolete. *Pet.* of the barren fl. lanceolate with a narrow involute point; of the fertile ovate, with a short inflected point. — Named in honour of Dr. C. B. Trinius, a Russian botanist, author of "*Species Graminum*," &c.

1. *T. vulgâris* D C. (common *H.*); glabrous, leaves tripinnate, leaflets linear filiform, involucre none or of one leaf, ribs of the fruit obtuse. *T. glaberrima* α. Hoffm. *Pimpinella dioica* *E. B.* t. 1209.

Limestone, rare. Near Bristol, on St. Vincent's Rocks; at Uphill, Somersetshire; Whorle Hill, Somerset; Bury Head, Devon. Near Athboy, county of Meath, Ireland. ♀. 5, 6. — Whole herb glaucous-green, pale, remarkable for the narrow segments of its leaves, and its diœcious flowers. *Root* fusiform.

#### 8. *HELOSCIADIUM* Koch. Marsh-wort. (Tab. I. f. 8.)

*Fruit* broadly ovate or oblong. *Carpels* with 5, slender, prominent ribs, with single *vittæ* between them; *carpophore* entire. *Cal-teeth* small or obsolete. *Pet.* ovate, obtuse with an apiculus. — Name: ἔλος, a marsh, and σκιάδιον, an umbel.

1. *H. nodiflorum* Koch (procumbent *M.*); stem procumbent creeping, leaves pinnate, leaflets ovate or ovate-lanceolate unequally serrate, umbels opposite to the leaves. — α. larger leaflets bluntly serrate, umbels longer than the peduncles or nearly sessile. *Sium* L.: *E. B.* t. 639. — β. smaller leaflets acutely serrate, umbels shorter than the peduncles. *Sium repens* L.: *E. B.* t. 1431.

Boggy meadows and sides of lakes and rivulets. 4. 7, 8. — Stems from 6 inches to 2 feet long. *Leaflets* 5—9. The two varieties often pass into each other.

2. *H. inundatum* Koch (*least M.*); stems creeping, lower leaves capillaceo-multipartite, upper ones pinnatifid, umbels generally of 2 rays. Sison *E. B. t.* 227.

Lakes and pools that are dried up in summer. 4. 6, 7. — Stems 4—6 inches long. *Leaves* mostly capillaceo-multifid, with the segments small and lanceolate, those of the upper leaves wedge-shaped and trifid. *Partial umbels* minute, scarcely longer than their *involucres*. *Univ. involucre* 0. *Fruit* large in proportion to the size of the plant.

9. Sison *Linn.* Bastard Stone-Parsley. (Tab. I. f. 9.)

*Fruit* ovate. *Carpels* with 5 ribs, and single clavate *vitta* between them. *Cal.-teeth* obsolete. *Pet.* broadly obcordate, deeply notched and curved, with an inflected point. (*Involucres of few leaves*: partial *subdimidiate*.) — Name: *sizon*, signifying in Celtic a *running brook*; some of the plants formerly placed in this genus delighting in such situations.

1. *S. Amomum* L. (*Hedge Bastard S.*). *E. B. t.* 954.

Chalky, rather moist ground, under hedges, in England. Near Coldstream, Scotland. 3. 8, 9. — *Stem* 2—3 feet high. *Lower leaves* pinnated with lobed, inciso-serrate, ovate *leaflets*; upper ones cut into narrow segments. *Petals* broad. *Fruit* roundish-ovate, pungent and aromatic.

10. *Ægopodium* *Linn.* Gout-Weed. (Tab. I. f. 10.)

*Fruit* oblong, crowned with the conical bases of the deflexed styles. *Carpels* with 5 slender ridges, without *vitta*. *Cal.-teeth* obsolete. *Pet.* obcordate, with an inflexed point. (*Involucre* 0.) — Named from *αἴ*, *ayos*, a *goat*, and *πους*, a *foot*; the leaves being cleft something like the foot of that animal.

1. *Æ. Podagraria* L. (*Common G. or Bishop-weed*). *E. B. t.* 940.

Gardens and wet places. 4. 6—8. — A foot and a half high. *Radical leaves* twice ternate, upper ones ternate; *leaflets* ovate, acuminate, unequally serrate. The creeping root is pungent and aromatic. Although now among our most common and noxious weeds, it appears to have been originally introduced by the monks.

11. *Cárum* *Linn.* Caraway. (Tab. I. f. 11.)

*Fruit* oblong, crowned with the depressed bases of the deflexed styles. *Carpels* with 5 ribs, and single *vitta* between them. *Cal.-teeth* obsolete. *Pet.* obcordate with an inflected point. — Name derived, according to Pliny, from that of the country, *Caria*; but more probably from the Celtic or Gaelic *carbh*, a *ship*, from the shape of the carpels.

1. *C. \*Cúruí* L. (*common C.*); root fusiform, stem branched, partial involucre none, universal none or 1-leaved. *E. B.* t. 1503.

Meadows and pastures, in several places both in England and Scotland. ♂. 6. — *Stem* 1—2 feet high. *Leaves* doubly pinnated, cut into linear segments, of which the lowermost are decussate. *Umbels* dense. *Carpels* agreeably aromatic, and well known as *Caraway seeds*. *Carpophore* bipartite.

2. *C. Bulbocístanum* Koch (*tuberous C.*); root tuberous, general and partial involucre of many linear-lanceolate leaves, leaves tripinnate, their segments linear acute. *Bunium* L.: *E. B. S.* t. 2862.

Fields. Cherry Hinton, Cambridgeshire; and over the whole of the chalk district from Bygrave, near Baldock, in Hertfordshire, to the neighbourhood of Dunstable (20 miles), so plentiful near Baldock, that the farmers turn their pigs upon the fallows to feed upon the root. ♀. 6, 7.

3. *C. verticillátum* Koch (*whorled C.*); root fascicled, leaflets all capillary in short whorled segments. *Sison* L.: *E. B.* t. 395.

In England, very rare; near Carlisle. In the flat parts of Wales. Killarney, and near Bantry Bay, Ireland. Extremely abundant in moist hilly pasturages in the west of Scotland, especially near the Clyde. ♀. 7, 8. — *Leaves* mostly radical; a long common *petiole* bears a number of opposite multifid capillary *leaflets*, whose spreading makes them appear whorled. *Stem* a foot high, slender. *Umbels* few, terminal. General and partial *involucre*s very small, deflexed.

## 12. *BÚNIUM* Koch. Earth-nut. (Tab. I. f. 12.)

*Fruit* oblong, crowned with the bases of the diverging or nearly straight styles. *Carpels* with 5 slender, obtuse ribs, and 2—3 elongated linear *vittæ* between them, and none upon the suture. *Cal.-teeth* obsolete. *Pet.* obcordate, with an inflected point. — Named from *Bovvos*, a *hill*, where the plant delights to grow.

1. *B. flexuósum* With. (*common E.*); stem-leaves few nearly sessile with linear segments, general involucre 0 or 1—2-leaved, styles erect with a conical base. *E. B.* t. 988.

Woods and pastures, frequent. ♀. 5, 6. — *Root* a solitary *tuber*, much sought for by children and pigs. *Stem* solitary, erect, flexuose. *Radical leaves* triternate. *Fruit* oblong, moderately ribbed, a little narrower upwards, crowned with the straight *styles*, which have conical, elongated, tumid bases.

## 13. *PIMPINÉLLA* Linn. Burnet-Saxifrage. (Tab. I. f. 13.)

*Fruit* ovate, crowned with the swollen base of the reflexed styles. *Carpels* with 5 slender ribs, the interstices furrowed,

with 2—3 long linear *vittæ*: suture with *vittæ*. *Cal.-teeth* obsolete. *Pet.* obcordate, with an inflected point. (Involucres 0.) — Name altered, as Linnæus informs us, from *bipennula*, or twice-pinnated, in allusion to the division of the leaves.

1. *P. Saxifraga* L. (*common B.*); radical leaves pinnate, their leaflets roundish sharply serrate or cut, those of the stem bipinnate with linear segments, stems terete, fruit glabrous. *E. B. t.* 407.

Dry pastures, frequent. 4. 7—9. — *Stem-leaves* few; lower and radical ones upon long stalks. *Leaflets* of the latter often deeply and pinnatifidly cut, and sometimes even bipinnatifid. *Peduncles* glabrous, or densely pubescent (*P. nigra* W.).

2. *P. magna* L. (*greater B.*); leaves all pinnate, leaflets ovate-serrate somewhat cut the terminal one (rarely the lateral ones) 3-lobed, stem angled and striated, fruit glabrous. *E. B. t.* 408.

Shady places, on a chalky or limestone soil, in several parts of England. Banks of the Teith, Perthshire. Near Cork, Mucross, and Killarney. 4. 7, 8. — Larger in all its parts than the foregoing, and the *leaflets* of the upper *leaves* much broader and less divided.

#### 14. *Sium* Linn. Water-parsnep. (Tab. I. f. 14.)

*Fruit* ovate or globose, subdidymous, crowned with the depressed base of the reflexed styles. *Carpels* with 5, rather obtuse ribs, and 2 or more *vittæ* between them: suture with *vittæ*. *Cal.-teeth* small or obsolete. *Pet.* obcordate, with an inflected point. (Partial involucre of many leaves.) — Name: according to Théis, from the word *siw*, water, from which comes the English word *sea*, and the Greek *σειω*, to shake.

1. *S. latifolium* L. (*broad-leaved W.*); stem erect, leaves pinnated, leaflets oblong-lanceolate equally serrated, umbels terminal. *E. B. t.* 204.

River-sides, ditches and watery places. Rather rare in Scotland. 4. 7, 8. — *Stems* 3—4 ft. high, furrowed. *Leaflets* distant, 5—9. *Involucre* of many leaves. *Fruit* small. *Base of styles* depressed. *Carpels* with the lateral ribs marginal; interstices with 3 superficial *vittæ*. *Albumen* flat on the inner face.

2. *S. angustifolium* L. (*narrow-leaved W.*); stem erect, leaflets unequally lobed and serrated, umbels pedunculate opposite to the leaves. *E. B. t.* 139.

Ditches and rivulets, frequent. Not common in Scotland. 4. 7, 8. — Smaller than the last. *Stem* striated. *Leaflets* of the upper *leaves* most unequal and laciniated: *radical leaves* ovate, their lowermost leaflets distant. *Involucre* many-leaved. *Base of styles* somewhat conical. *Ribs* of the *carpels* not prominent: lateral ones not marginal. *Vittæ* 3 or more together, immersed. *Albumen* terete.

15. *BUPLEURUM* Linn. Hare's-Ear. (Tab. I. f. 15.)

*Fruit* ovate-oblong, crowned with the depressed base of the styles. *Carpels* with 5, more or less prominent ribs, with or without *vitta*. *Cal.-teeth* obsolete. *Pet.* roundish, entire with an involute retuse broad point. (Leaves *undivided*.)—Named from βους, an ox, and πλευρον, a rib, in allusion to the ribbed leaves of some species.

1. *B. aristatum* Bartl. (*narrow-leaved H.*); stem branched, universal and partial involucre each about 4—5-leaved, leaflets lanceolate cuspidate with branching nerves longer than the umbels, leaves linear 3-nerved, stem panicled, pedicels short equal. *B. Odontites* *E. B.* t. 2468. (*not* L.)

Rocks in the neighbourhood of Torquay. Channel Islands. ☉. 7. — A small plant, 3—6 inches or more high, with rigid, striated, pale yellow-green, pungent leaves. *Flowers* in terminal, much involucreted umbels.

2. *B. rotundifolium* L. (*common H. or Thorow-wax*); stem branched above, universal involucre wanting, partial involucre mucronate, leaves perfoliate roundish-oval. *E. B.* t. 99.

Corn-fields in England, on chalky soil. Abundant about Swaffham, and in Cambridgeshire. Streatly, Berkshire. ☉. 6, 7. — *Carpels* with the interstices striated.

3. *B. tenuissimum* L. (*slender H.*); stem very much branched, leaves linear acute, umbels very minute few-flowered, partial ones usually shorter than the setaceous involucre. *E. B.* t. 478.

Salt-marshes on the south and east coasts of England. Banks of the Dee, below Chester. ☉. 8, 9. — *Stems* very wiry, slender. *Leaves* remote, very sharp, mostly 3-nerved. *Umbels* inconspicuous, often sessile and axillary. *Carpels* granulated between the 5 ribs, by which it differs from all our other species.

4. *B. \*falcatum* L. (*falcate-leaved H.*); stem erect branched, radical leaves oblong or obovate on long stalks, upper sessile linear-lanceolate, partial involucre of 5 lanceolate leaves as long as the flowers, universal 5-leaved. *E. B. S.* t. 2763.

Norton Heath, near Ongar, Essex, growing by the road-side for nearly a mile. 4. 8.

*B. Fruit not prickly nor beaked, ovate or elliptical, rounded on a transverse section. (Carpels separating, interstices with vitta.) Albumen solid. (Gen. 16—23.)*

16. *CENANTHE* Linn. Water-Dropwort. (Tab. II. f. 16.)

*Fruit* ovate-cylindrical, crowned with the long nearly straight styles. *Carpels* more or less corky, with 5 blunt, convex ribs,

and single *vittæ* in the interstices. *Cal.-teeth* lanceolate. *Pet.* obcordate, with an inflected point, radiant. (Partial involucre of many rays.) Flowers of the circumference on long stalks and sterile: those of the centre sessile, or nearly so, and fertile. — Named from *owos*, wine, and *avθos*, a flower, alluding to the vinous smell of the blossoms.

1. *Æ. fistulôsa* L. (common *W.*); root stoloniferous, stem-leaves pinnated, their main stalk as well as the stem cylindrical fistulose, umbels of very few rays, fruit turbinate. *E. B.* t. 363.

Ditches and rivulets, common in England, rare in Scotland. 4. 7—9. — Plant 2—3 feet high, remarkably tubular. Root sometimes of fasciated knobs, sometimes of verticillate fibres, but always throwing out runners. Stem-leaves distant; the leaflets, which are few, linear and small, are confined to the upper extremity of the leaves. *Univ. invol.* wanting. Fruit sessile, large, turbinate, angled, corky, tipped with the long rather diverging styles, and forming dense globose heads as large as a marble.

2. *Æ. pimpinelloïdes* L. (callous-fruited *W.*); leaflets and segments very acute or mucronate, those of the radical leaves much broader and shorter, fruit cylindrical with an enlarged callous base. *Jacq. Austr.* t. 394.

Pastures in England, particularly in the counties of Gloucester, Worcester, Dorset, and Devon. Abundant in the Isle of Wight. Rare in salt-marshes, Isle of Wight; and Bishopstone, near Seaford, in Sussex. 4. 6—8. — Root of long slender fibres swelling into a round or oval knob about or beyond the middle. *Gen. invol.* sometimes wanting, usually with several persistent leaves. Umbels compact. Fruit as broad as the calyx. "The stem dies away after the seed has ripened; young plants grow up around its base in the form of suckers." *H. Watson.*

3. *Æ. Lachenálii* Gmel. (*Parsley W.*); leaflets of the lower leaves linear obovate, or cuneate-trifid obtuse mucronate, of the upper ones acute, fruit turbinate or oblong narrowest and without a callosity at the base. *Æ. pimpinelloïdes* *Huds.*: *E. B.* t. 347.

Salt-marshes in England, not uncommon; more rare in fresh water. In Scotland chiefly on the west coast and always near the sea. 4. 7—9. — Always flowers later than the last. Root of sessile, long, clavate fusiform knobs, or subcylindrical thick fibres. *Gen. invol.* sometimes wanting, usually several-leaved and persistent. Umbels lax, so that the partial ones are not close to each other. Fruit broader than the calyx. The radical leaves disappear very early, so that practically this must be distinguished from the preceding by the fruit and root. Perhaps it is a mere variety of *Æ. peucedanifolia* Poll.

4. *Æ. silaifolia* Bieb. (*Sulphur-wort W.*); leaflets and seg-

ments of the lower stem-leaves linear-lanceolate acute scarcely broader than those of the upper stem-leaves, fruit subcylindrical callous at the base. *Æ. peucedanifolia* *Sibth.* (not *Poll.*): *E. B. t.* 348.

In fresh-water marshes and meadows, rare. Counties of Oxford, Bedford, Gloucester, Worcester, Leicester, Surrey, and Sussex. Very rarely in salt-marshes, as at Port Marnoch, Co. Dublin, Ireland. 4. 6. — *Root* of sessile, rather short, clavate or oblong-fusiform knobs. *Branches* very fistulose. *Gen. invol.* usually wanting, or of a few caducous leaves. *Umbels* lax. In this and the two preceding we have availed ourselves of Mr. H. C. Watson's characters.

5. *Æ. crocata* L. (*Hemlock W.*); leaves tri-quadrifoliate, leaflets stalked cuneate-ovate or roundish cut and serrated, those of the upper leaves narrower, fruit cylindrical-oblong without a callous base. *E. B. t.* 2313.

Watery places, by ditches and rivers, frequent. 4. 7. — *Root* consisting of large fusiform sessile knobs. *Plant* 3—5 ft. high. This differs from all the preceding in the great breadth of its leaflets, and the large, much ramified stems, the juice of which becomes often yellow when exposed to the air. *Gen. invol.* usually of a few leaves.

6. *Æ. Phellandrium* Spr. (*fine-leaved W.*); "stem erect thickened at the base with many whorled fibres, leaves tripinnate their segments simple or pinnatifid, those of the submersed ones capillary, umbels lateral opposite to the leaves, fruit ovate twice as long as the nearly erect styles." *Colem. in E. B. S. t.* 2944 (*ad calcem*). *Phelland. aquaticum* L.: *E. B. t.* 684.

Ditches and ponds. Not uncommon in England. Very rare in Scotland. 8. 7—9.

7. *Æ. fluviatilis* *Colem.* (*River W.*); "stem ascending floating attenuated and creeping at the base, leaves bipinnate, segments simple or pinnatifid, those of the submersed ones wedge-shaped pellucid cut with many parallel nerves, umbels lateral opposite to the leaves, fruit broadly elliptical thrice as long as the spreading styles." *Colem. in E. B. S. t.* 2944.

Streams in the middle and south-east of England, where it is more common than the last. 4. 7—9. — This has certainly a different appearance from the last, but we are not yet satisfied of its not being the same species growing in deeper and running water: when the current is gentle, Mr. Woods has observed the stems thickened towards the base. It would appear, too, that the flowering-stems are unlike those which bear the above-described submersed leaves: we can perceive no difference in the form of the fruit. It was first noticed by Dillenius, and seems to have been considered till lately a form of the last by both British and Foreign botanists.

17. *Æthusa* *Linn.* Fool's-Parsley. (Tab. II. f. 17.)

*Fruit* ovate-globose. *Carpels* with 5 acute ribs; interstices

deeply acutangular with single *vittæ*. *Cal.-teeth* minute. *Pet.* obcordate, with an inflexed point. (Partial involucre of 1—3 *unilateral drooping or spreading leaves*).—Name from *αἰθω*, to burn, on account of its acrid quality.

1. *Æ. Cynápium* L. (*common F.*): leaflets wedge-shaped decurrent with lanceolate bluntish segments, rays of the umbel nearly equal, involucre none, partial one longer than the umbel. *E. B.* t. 1192.

Fields and gardens. ☉. 7, 8. — *Stem* a foot high, striated, branched, very leafy. *Leaves* glabrous, doubly, or the lower ones trebly, pinnate; segments ovate-lanceolate, variously cut. *Umbels* terminal, on long stalks; *partial* ones small, distant. *Partial invol.* of 3 long, pendent leaves, all on one side. The smell is nauseous, and the plant is esteemed very unwholesome.

### 18. FÆNICULUM Hoffm. Fennel. (Tab. II. f. 18.)

*Fruit* oblong. *Carpels* with 5 prominent, obtuse ribs, with single *vittæ* in the interstices. *Styles* short. *Cal.-teeth* obsolete. *Pet.* roundish, entire, the involute segment obtuse. (Involucre 0.)—Named from *fœnum*, hay, its smell having been compared to that of hay.

1. *F. vulgäre* Gærtn. (*common F.*); leaves biternate, leaflets pinnatifid, segments awl-shaped or filiform. *Anethum Fœniculum* L.: *E. B.* t. 1208.

Rocks in England near the sea, especially on chalky cliffs. Near towns and villages in Norfolk and Suffolk, at short distances from the coast, but scarcely indigenous. 4. 7, 8. — *Stem* 3—4 ft. high. *Leaves* much divided; their segments very slender in the cultivated form, but usually shorter and more rigid in wild specimens, particularly those of the upper leaves. *Flowers* dark yellow; the base of the *styles* very glutinous. The true Fennel of the gardens, *F. dulce*, is scarcely distinct, and may be the Norfolk and Suffolk plant: its seeds are carminative. The boiled leaves are served up with mackerel on the eastern coasts of England.

### 19. SÉSELI Linn. Meadow-Saxifrage. (Tab. II. f. 19.)

*Fruit* oval or oblong, crowned with the long reflexed *styles*. *Carpels* with 5 prominent obtuse corky ribs, with single *vittæ* in the interstices. *Cal.-teeth* acute. *Pet.* obcordate, with an inflexed point. (Partial invol. of many leaves).—Named from *σέσλι*, originally applied to some plant of this kind.

1. *S. Libanótis* Koch (*Mountain M.*); stem furrowed, leaves bipinnatifid, leaflets inciso-pinnatifid, of the lower ones decussate, the segments lanceolate very acute, umbels hemispherical, universal involucre of many leaves, segments of the calyx



elongated subulate deciduous, fruit villous. *Athamanta* L.: *E. B.* t. 138. *Libanotis montana* Crantz.

Chalky pastures, very rare. Gogmagog hills, Cambridgeshire; between St. Alban's and Stony-Stratford; between Seaford and Cushman, Sussex. *fl.* 7, 8.—*Root* fusiform, crowned with the fibrous bases of the old leaves. *Stem* 1½—2 ft. high.

## 20. *LIGUSTICUM* Linn. Lovage. (Tab. II. f. 20.)

*Fruit* elliptical. *Carpels* with 5 sharp, somewhat winged ribs, with many *vittæ* in the interstices. *Cal.-teeth* sometimes obsolete. *Pet.* obcordate, with an inflexed point. (Partial involucre of many leaves.)—Named from *Liguria*, where the old *Ligusticum Levisticum* abounds. From the latter word comes its name, *Lovage*.

1. *L. Scoticum* L. (*Scottish L.*); leaves twice ternate, leaflets subrhomboid dentate-serrate not glossy, general involucre of about 6 narrow leaves, calyx 5-toothed. *E. B.* t. 1207.

Rocky sea-coasts, in the north of England and Scotland, frequent. *fl.* 7.—*Root* fusiform, acrid but aromatic. *Stem* nearly simple. *Leaves* mostly radical; leaflets large, deeply serrated, rather fleshy.—In the island of Skye this plant is eaten raw and called *Siánas*.

## 21. *SILAUS* Besser. Pepper-Saxifrage. (Tab. II. f. 21.)

*Fruit* oval. *Carpels* with 5 sharp, somewhat winged ribs, with many *vittæ* in the interstices. *Cal.* obsolete. *Pet.* obovate, submarginate with an inflexed point, appendaged; or sessile and truncated at the base. (Partial involucre of many leaves.)—Scarcely different from *Ligusticum*, except in its yellowish, nearly entire (not acutely emarginate) petals, truncated and sessile at the base.—Name of dubious origin; it was applied by Pliny to some herb.

1. *S. pratensis* Besser (*Meadow P.*); leaves tripinnate, leaflets linear-lanceolate opposite, general involucre of 1 or 2 leaves. *Peucedanum Silaus* L.: *E. B.* t. 2142.

Pastures and meadows, not unfrequent in England. Near Oxenford Castle and Kelso, Scotland. *fl.* 6—9.—*Stem* 1—2 feet high. *Partial umbels* small, distant. *Flowers* pale yellow. Whole plant fetid when bruised, apparently rejected by cattle.

## 22. *MÉUM* Tourn. Spignel. (Tab. II. f. 22.)

*Fruit* elliptical. *Carpels* with 5 prominent, carinated, equal ribs, with many *vittæ* in the interstices. *Cal.-teeth* obsolete. *Pet.* entire, elliptical, the point incurved. (Partial involucre of many leaves.)—Name: supposed to be the *μῆρον* of Dioscorides.

1. *M. Athamanticum* Jacq: (*Meu*, or *Bald-Money*); all the

leaflets multipartite, segments bristle-shaped. *E. B. t.* 2249. *Athamanta Meum L.*

Dry alpine pastures, in the north of England and Scotland, especially in the Highlands, frequent. *4.* 6, 7.—*Root* fusiform, eaten by the Highlanders as an aromatic and carminative: at its summit are the fibrous remains of former years' leaves. *Leaves* long, dark-green, doubly-pinnate. *Flowers* yellowish.—Remarkable for its setaceo-multifid leaf and powerfully aromatic smell. *Bald*, or *Bald-money*, is a corruption of *Balder*, the *Apollo* of the northern nations, to whom this plant was dedicated.

23. CRITHMUM *Linn.* Samphire. (Tab. II. f. 23.)

*Fruit* elliptical. *Carpels* spongy, with 5 elevated, sharp, somewhat winged ribs, and as well as the loose seed, abundantly marked with vittæ. *Cal.-teeth* obsolete. *Pet.* elliptical, entire, involute. (Involucres of many leaves.)—Name from κριθή, barley; from the resemblance between the fruit of this plant and a grain of barley.

1. *C. maritimum L. (Sea S.). E. B. t.* 819.

Rocks by the sea-side. Rare in Scotland; on the coast of the Solway Frith, and Colzean Castle, Ayrshire. *4.* 5—8.—Whole plant very succulent, pale green. *Leaves* bi-triternate; leaflets lanceolate fleshy. Leaves of the involucre lanceolate.—*Samphire* makes a warm aromatic pickle; but the *Salicornia herbacea*, although much inferior, is often sold for it.

*C. Fruit not prickly nor beaked, much and dorsally compressed: Albumen solid. (Gen. 24—28.)*

24. ANGÉLICA *Linn.* Angelica. (Tab. II. f. 24.)

*Fruit* flat, with 2 wings on each side. *Carpels* with 3 elevated dorsal ribs, the lateral ones spreading into broad wings. *Cal.-teeth* small or obsolete. *Pet.* elliptical-lanceolate, entire and inflexed at the point.—Named *Angelic* from its cordial and medicinal properties.

1. *A. \*Archangélica L. (Garden A.);* terminal leaflet lobed, calyx 5-toothed, fruit without vittæ, seel free marked with numerous vittæ. *E. B. t.* 2561. *Archangelica officinalis Hoffm.*

Watery places, rare. Near Birmingham; Thames' side near Dorking; also in Durham; but nowhere truly wild. ♂. 7—9.—*Stem* 4—5 feet high, and from 1—2 inches in the thickest diameter, glabrous, fistulose. *Leaves* bipinnate; flowers greenish-white.—*Candied Angelica*, a well known article in confectionary, consists of the prepared stalks of this plant.

2. *A. sylvestris* L. (*wild A.*); leaflets equal ovate serrated at the base somewhat lobed, calyx-teeth obsolete, fruit with the interstices of the ridges having single vittæ, seed adhering without vittæ. *E. B.* t. 1128.

Moist woods and marshy places, especially near rivers, frequent.

4. 7, 8. — *Plant* 2—3 feet high. *Stem* purplish, pubescent above, as well as the *umbels*. — Inferior in its qualities to the former species.

## 25. PEUCÉDANUM Linn. Hog's-Fennel. (Tab. II. f. 25.)

*Fruit* flat with a broad thin border.<sup>1</sup> *Carpels* with 5 slightly prominent nearly equidistant ribs, the 2 lateral ones obsolete, *vittæ* single in the interstices. *Pet.* obovate or obcordate, with an inflected point. (Partial involucre of many leaves.) — Named from *πενκη*, a *pine-tree*, and *δωρον*, a *gift*; on account of a resinous substance, which exudes from some of the species.

1. *P. officinále* L. (*Sea H.*, or *Sea Sulphur-weed*); leaves five times tripartite, leaflets linear-filiform flaccid, involucre few linear deciduous, calyx 5-toothed, fruit with a narrow margin. *E. B.* t. 1767.

In salt-marshes, very rare. Kent and the coast of Essex. 4. 7—9. — Remarkable for its large *umbels* of yellow *flowers*, and its long and extremely narrow *leaflets*. The whole plant, especially the *root*, has a strong sulphureous smell, and the latter yields a resinous substance, reckoned stimulant, but of dangerous internal use.

2. *P. palústre* Mœnch (*Marsh H.*, or *Milk-Parsley*); milky, leaves ternately decompound, leaflets opposite pinnatifid, segments linear-lanceolate with a hard point, rays of the umbel rough, involucre of many persistent lanceolate leaves, calyx 5-toothed, fruit with a narrow margin. *Selinum*. *E. B.* t. 229.

Marshy and boggy places, but apparently very local. Yorkshire and Lancashire; about Norwich and the Isle of Ely; Burwell Fen, Cambridgeshire. Ardincaple on the Clyde. 4. 7—8. — *Stem* furrowed, 4—5 feet high, with very compound *leaves*, abounding in a milky juice, which dries to a brown resin. *Flowers* white.

3. *P. \* Ostrúthium* Koch (*broad-leaved H.*, or *Master-Wort*); leaves biternate, leaflets broadly ovate lobed incise-serrate, unequal at the base, sheaths very large, universal involucre none, calyx-teeth obsolete, fruit with a very broad margin. *Imperatoria*. *E. B.* t. 1380.

Moist pastures in various parts of Scotland; the plant was formerly much cultivated as a potherb. 4. 6. — *Flowers* white. *Partial involucre*s several, subulate.

<sup>1</sup> In this genus and the three next, the wing of the fruit, being composed of the margin of two carpels, may separate in maturity into a double wing; but in *Angélica* the wing is always double.

26. *PASTINÁCA* Linn. Parsnep. (Tab. II. f. 26.)

*Fruit* flat, with a broad border. *Carpels* with 3 dorsal and 2 distant marginal ribs on the border, with single filiform *vittæ*, the length of the fruit, in the interstices. *Cal.-teeth* nearly obsolete. *Pet.* roundish, entire, involute, with a sharp point. (Involucres 0 or of few leaves.)—Differs from *Heracleum* in the entire involute petals, and filiform, not clubbed, vittæ. —Name derived from *pastus*, food.

1. *P. sativa* L. (common wild P.); stem furrowed, leaves pinnate downy beneath, leaflets ovate cut and serrated, ultimate one 3-lobed, involucres none, fruit oval. *E. B.* t. 556.

Borders of fields and pastures in a chalky or gravelly soil. About Cambridge; Crosby, by Liverpool; abundant in Hants and Essex. ♂. 7, 8. — *Root* fusiform; the origin of our garden *Parsnep*. *Leaves* generally shining. *Petals* very convex, involute, yellow.

27. *HERÁCLEUM* Linn. Cow-Parsnep. (Tab. II. f. 27.)

*Fruit* flat, with a broad border. *Carpels* with 3 dorsal ribs and 2 distant marginal ones, and rather short club-shaped *vittæ* in the interstices. *Pet.* obcordate, point inflexed; outer ones radiant. (Involucre deciduous; partial of many leaves.)—Named from *Hercules*, who is said to have brought this or some allied plant into use.

1. *II. Sphondylium* L. (common C., or Hog-weed); leaves pinnated rough hairy, leaflets pinnatifid cut sinuated, ultimate one somewhat palmated, petals unequal, fruit glabrous nearly orbicular. *E. B.* t. 939. — *β.* leaves more deeply cut, lobes narrower. *II. angustifolium* Sm.

Hedges, pastures, and bushy places, frequent. ♂. 7. — A tall rank weed, 4—5 ft. high. *Leaves* coarsely serrated, sheaths inflated. *Flowers* white or reddish. *Carpels* with 2 *vittæ* on the suture. — Hogs are fond of this plant, and it is said to be wholesome and nourishing for cattle in general.

28. *TORDÝLIUM* Linn. Hart-wort. (Tab. II. f. 28.)

*Fruit* flat, with a broad thick crenated or waved border. *Carpels* with indistinct ribs, 3 dorsal and 2 distant marginal ones, with 1 or 3 *vittæ* in the interstices. *Pet.* radiant.—Name: the *τορδυλιον* of the Greeks.

1. \**T. officinále* L. (small II.); 2 outer petals of the flowers of the ray each with one very large lobe, partial involucres setaceous as long as the umbels, fruit with the thickened border beautifully crenated and glabrous. *E. B.* t. 2440.

Near London (?) *Ray* and *Petiver*. ☉. 6, 7. — Hairy, 1 foot high. *Leaflets* few, ovate, lobed and notched, upper ones confluent.

*Flowers* beautiful, with the outer large lobes of the *petals* white. *Fruit* rough on the surface, and having a very thick, pale, deeply notched or almost beaded border. *Vittæ* several between the ribs, and on the suture.

2. *T. maximum* L. (*great H.*); 2 outer petals of the flowers of the ray each with 2 equal lobes, involucres linear shorter than the umbel, fruit with the thickened border scarcely notched and as well as the disk rough with appressed bristles. *E. B.* t. 1173.

Rare; in waste ground about London, Oxford, and Eton. Between Twickenham and Isleworth. ☉. 6, 7. — Much taller than the last, and with a greater number of more lanceolate *leaflets*. *Involucre* very short. *Petals* all comparatively small, rose-coloured. *Vittæ* solitary between the ribs, 2 on the suture.

*D. Fruit globose, not prickly; (carpels scarcely separating.)*  
*Albumen solid.* (Gen. 29.)

## 29. CORIÁNDRUM Linn. Coriander. (Tab. II. f. 29.)

*Fruit* globose. *Carpels* closely cohering, the ribs obsolete, broad; interstices prominent, slender, without *vittæ*. *Petals* obcordate with an inflected point; outer ones radiant. (*Involucre* 0. Partial on one side.)—Name: from *kopis*, a *bug*; in allusion to the intolerably fetid smell of the bruised foliage.

1. *C. \*sativum* L. (*common C.*). *E. B.* t. 67.

Fields and waste places, about Ipswich and in Essex, &c. ☉. 6. — This is the only true species of the genus, and is well known as a medicinal plant. The *seeds* are highly aromatic, and sold enveloped in sugar as *Coriander comfits*. *Stem* erect, leafy. *Lower leaves* bipinnate; the pinnæ pinnatifid with broad, wedge-shaped, toothed segments: the *upper leaves* gradually more compound, their segments very narrow and linear, those of the uppermost leaves nearly setaceous. *Fruit* very curious; each *carpel* is hemispherical, on its inner and flat side having a projecting margin, which so combines with the opposite one as to leave no line or furrow between the two, and they form a complete little ball or globe, having, however, when quite ripe, 10 obscure elevated lines or ribs.

*E. Fruit short and turgid, not prickly nor beaked, somewhat laterally compressed. Albumen furrowed or involute at the suture.* (Gen. 30—32.)

## 30. CONÍUM Linn. Hemlock. (Tab. II. f. 30.)

*Fruit* broadly ovate. *Carpels* with 5 prominent waved or crenated ribs, without *vittæ*. *Albumen* furrowed. *Cal-teeth* obsolete. *Petals* obcordate. (*Involucre of few leaves; partial of 3 leaves on one side.*)—Name: *κωνιον*, of Theophrastus, from

*κavos*, a cone or a top, whose whirling motion resembles the giddiness produced on the human constitution by the poisonous juice of this plant.

1. *C. maculátum* L. (*common H.*); stem glabrous spotted, leaves tripinnate, leaflets lanceolate pinnatifid with acute and often cut segments. *E. B.* t. 1191.

Waste places, banks, and under walls, not unfrequent. ♂. 6, 7. — *Root* fusiform. *Stem* 2—4 feet high, hollow, striated and spotted with purple, much branched upwards. *Leaves* large, much divided, when bruised extremely fetid, yielding a powerful medicine. It is best distinguished from its allies by its spotted stem, fetid smell, and by the unilateral partial involucre (which are ovate-lanceolate acuminate and shorter than the umbels), together with the waved ridges of the fruit.

### 31. *PHYSOSPÉRMUM* Cuss. Bladder-seed. (Tab. III. f. 31.)

*Fruit* of 2 ovate-globose lobes or *carpels*, each with 5 indistinct filiform ribs, and single *vittæ* between them. *Albumen* furrowed. *Cal.-teeth* evident. *Pet.* obcordate. (Involucre and partial involucre of 1—5 leaves.) — Named from *φύσα*, a bladder, and *σπέρμα*, a seed, from the loose covering to the seed.

1. *P. Cornubiense* Hook. (*Cornish B.*). *P. aquilegifolium* Koch. *Ligusticum Cornubiense* L.: *E. B.* t. 683.

Bushy fields, about Bodmin, in Cornwall. Wood on the Devonshire side of the Tamar (now extinct). 4. 7, 8. — *Stem* a foot and a half to 2 feet high, erect, striated, glabrous, panicled above. *Leaves* mostly radical, on long stalks, triternate; leaflets wedge-shaped, cut and lacinated or deeply tripartite, the segments acute, glabrous or minutely downy on the veins and margins. *Cauline leaves* few, small, less divided, the segments longer and slenderer. The coat of the *carpels* is crustaceous and so loose that the seed is free within.

### 32. *SMÝRNIUM* Linn. Alexanders. (Tab. III. f. 32.)

*Fruit* of 2 nearly globose lobes or *carpels*, each with 3 dorsal prominent sharp ribs, the two lateral ones obsolete; interstices in the several *vittæ*. *Albumen* involute. *Pet.* lanceolate or elliptical, with an inflexed point. — Named from *σμύρνα*, synonymous with *μυρρά*, *myrrh*, from the scent of the juice of some species.

1. *S. Olusátrum* L. (*common Alexanders*); cauline leaves ternate petiolate serrate. *E. B.* t. 230.

Waste ground and among ruins, especially near the sea; not unfrequent. ♂. 4—6. — *Stem* 3—4 feet high, very stout, furrowed. *Leaves* bright yellow-green, twice (or the lower ones thrice) ternate, with a very broad membranous base; leaflets very large, broadly ovate, lobed and serrated. *Flowers* yellow-green, in very dense,

numerous, rounded umbels. *Involucres* none. *Fruit* almost black when ripe. — Aromatic, but too strong and pungent to be agreeable. Formerly used as a potherb.

*F. Fruit oblong, not prickly furrowed or involute at the suture, usually more or less beaked. (Gen. 33—36.)*

33. *SCÁNDIX* Linn. Shepherd's Needle. (Tab. III. f. 33.)

*Fruit* laterally compressed, with a long beak. *Carpels* with 5 obtuse ribs and no *vittæ*. *Cal.-teeth* obsolete. *Pet.* obovate, with an inflected point. (Universal involucre wanting, or of one leaf; partial one of 5—7 leaves.)—Name: *σκάνδιξ*, the Greek appellation for some kind of *chervil*.

1. *S. Pécten* L. (common *S.*, or *Venus' Comb*); beak 3—4 times longer than the roughish fruit dorsally compressed ciliated with bristles, leaflets cut into many linear or lanceolate short segments. *E. B. t.* 1397.

Corn-fields, abundant. ☉. 6—9. — *Stem* 4—12 inches high, roughish. *Leaves* triply pinnate. *Umbels* of very few rays, 2—3: universal ones often sessile in the axil of the sheath of the upper leaves. *Partial invol.* entire or cut, rarely pinnatifid or bipinnatifid and resembling the segments of the leaves. *Fruit* very large in proportion to the size of the plant and of the flowers that produce it.

34. *ANTHRÍSCUS* Pers. Beaked-Parsley. (Tab. III. f. 34.)

*Fruit* constricted at the suture, with a short beak. *Carpels* without ribs or *vittæ*. *Cal.-teeth* obsolete. *Pet.* obovate. (Partial involucre of many leaves.)—Name: given by Pliny to a plant, allied probably to this genus, but we are ignorant of its derivation.

\* *Fruit smooth.*

1. *A. sylvestris* Koch (*wild B.*); umbels terminal stalked, stem hairy at the base glabrous upwards, a little swelling below each joint. *Chærophyllum* L.: *E. B. t.* 752.

Under the hedges and borders of fields, frequent. ♀. 4—6. — *Stem* 3 ft. or more high, branched. *Leaves* triply pinnate; leaflets ovate-lanceolate, deeply cut. *Umbels* at first slightly drooping. *Partial involucres* of several ovate-lanceolate ciliated leaves. *Fruit* linear-oblong, with a much less evident beak than in *A. Cerefolium*. This beak alone is marked with a few ribs.

2. *A. \*Cerefolium* Koch (*Garden B.*, or *Chervil*); umbels lateral sessile, stems hairy above the joints only, leaves tripartite decompound, leaflets ovate pinnatifid the segments obtuse. *Scandix* L.: *E. B. t.* 1268.

Hedges and about gardens. Clifton, Notts: *Dr. Howitt*. ☉.

5—7. — *Stem* slender,  $1\frac{1}{2}$ —2 ft. high. *Leaves* pale yellow-green, delicate. *Umbels* sessile, lateral, of few rays, pubescent. *Partial involucre* of few, about 3, leaves, unilateral, linear. *Umbellules* small. *Fruit* large, perfectly glabrous, linear: *beak* about half as long as the fruit.

\*\* *Fruit muricated.*

3. *A. vulgáris* Pers. (*common B.*); umbels stalked opposite the leaves; stem glabrous, leaves ternately decompound, the segments obtuse, fruit ovately conical hispid about twice as long as the glabrous beak. *Scandix Anthriscus* *E. B. t.* 818.

Waste places, by road-sides, especially near towns and villages. ☉. 5, 6. — *Stem* 2 ft. or more high, swelling under each joint. *Leaves* slightly hairy. *Partial umbels* small, with small *involucre*s. *Fruit* rather large, with a distinct furrow on each side which extends to the *beak*, covered with hooked bristles.

### 35. CHÆROPHÝLLUM Linn. Chervil. (Tab. III. f. 35.)

*Fruit* laterally compressed or constricted, with a very short beak. *Carpels* with 5 obtuse ribs, with a deep furrow on the inner face of the carpels. *Interstices* with single *vittæ*. *Cal-teeth* obsolete. *Pet.* obcordate, with an inflexed point. (*Partial involucre of many leaves.*)—Named from χαίρω, to rejoice, and φύλλον, a leaf; hence comes our word *Chervil*, applied to the cultivated *Anthriscus Cerefolium*, whose leaves have an agreeable smell.

1. *C. temuléntum* L. (*rough C.*); fruit glabrous with obtuse ribs, stem rough (spotted) swelling below each joint, leaflets ovate-oblong cut, partial involucre reflexed. *E. B. t.* 1521.

Hedges and copses, common. ♂. 6, 7. — *Stem* 3 ft. or more high, rough with hairs. *Leaves* doubly pinnate; leaflets pinnatifid or incise-lobate, the segments obtuse, mucronate. *Umbels* at first drooping. *Fruit* linear-oblong, striated.

2. *C. \*aúreum* L. (*tawny-fruited C.*); pubescent, fruit with obtuse ribs coloured, stem slightly swelling below the joints, leaflets very acuminate incise-pinnatifid. *E. B. t.* 2103.

Fields between Arbroath and Montrose, and near Corstorphine, Edinburgh. ♀. 6. — *Stem* 3 ft. or more high, branched, aromatic. *Leaves* tripinnate; leaflets peculiarly attenuated, at least on the upper leaves (for the radical ones are more obtuse), a character which distinguishes this from every other British species.

3. *C. \*aromaticum* L. (*broad-leaved C.*); fruit with obtuse ribs, leaves subternate bipinnate, leaflets ovate-oblong sub-acuminate serrate undivided. *E. B. t.* 2636.

By the side of a river called Lunan and Vennie near Guthrie, Forfarshire. ♀. 6. — *Stem* 2—3 ft. high, slightly pubescent below, glabrous above. *Leaves* biternate; leaflets large, undivided or rarely



with a small lobe near the base, pubescent beneath. In this, as well as in *C. aureum*, there is sometimes a small *general involucre*. No one has ever found this plant or the preceding, except the late Mr. G. Don, although the stations have been repeatedly searched.

### 36. *MYRRHIS* Tourn. Cicely. (Tab. III. f. 36.)

*Fruit* laterally compressed, with scarcely any beak; suture with a deep furrow. *Carpels* of 2 membranes, deeply furrowed with 5 very prominent acute ribs, and a hollow under them. *Vittæ* none. *Cal.-teeth* obsolete. *Pet.* obcordate with an inflexed point. (Partial involucre of many leaves. Many of the partial umbels abortive.)—Name: perhaps derived from *μύρρα*, *myrrh*; the foliage of one species at least possessing an agreeable scent.

1. *M. odorata* Scop. (*sweet C.*); leaves somewhat villous beneath, partial involucre lanceolate subulate. Scandix *L.*: *E. B.* t. 697.

Pastures in mountainous countries, especially in the north of England and Lowlands of Scotland, generally near houses. *Æ.* 5, 6.—Whole plant highly aromatic. 2 ft. and more high. *Leaves* large triply pinnate; *leaflets* pinnatifid, ovate-lanceolate, incise-serrate. Many of the *partial umbels* of this species, especially the inner ones, and sometimes even entire *umbels* prove abortive. The *fruits* are remarkable for their large size and powerful fragrance.

G. *Fruit clothed with prickles or with a prickly involucre.*  
(Gen. 37—40.)

### 37. *DAUCUS* Linn. Carrot. (Tab. III. f. 37.)

*Fruit* dorsally compressed, elliptic-oblong. *Carpels* with 3 dorsal ribs and two in the inner face, bristly, the four interstices very prominent, and crowned with a single row of long flat prickles. *Albumen* solid. *Pet.* radiant, those of the ray deeply bifid. (Involucre often pinnatifid.)—Name: the *δαυκος* of Dioscorides.

1. *D. Carota* L. (*wild C.*); prickles of the fruit slender distinct at the base, leaves tripinnate, leaflets pinnatifid, segments linear-lanceolate acute, umbels when in seed concave. *E. B.* t. 1174.

Pastures and borders of fields, very frequent. *♂.* 6—8.—The origin of our garden Carrot.

2. *D. maritimus* With. (*Sea-side C.*); prickles of the fruit usually flattened contiguous and united at the base, leaves tripinnate, leaflets pinnatifid lanceolate fleshy, segments rounded, umbels convex or flat when in seed.—*a.* petals entire white or

tinged with red. *E. B. t.* 2560. —  $\beta$ . petals fringed greenish-yellow.

Sea-coast of Kent, Dorset, Devon, and Cornwall. Anglesea, Galloway, and Island of Lismore; Scotland. Ireland. —  $\beta$ . Dorset, *E. Forbes.*  $\zeta$ . 7, 8. — Usually smaller than the preceding, with broader and more fleshly radical *leaves*, and in general with the *prickles* of the *fruit* shorter. But the two are scarcely permanently distinct. Mr. Babington notices a plant (supposed by him to be *D. Gingidium*), with the leaves and convex umbel of *D. maritimus*, but the prickles of the fruit of *D. Carota*; and Mr. E. Forster has traced them from the one extreme to the other. (See *Bot. Gazette*, i. p. 292.)

### 38. CAUCALIS Linn. Bur-Parsley. (Tab. III. f. 38.)

*Fruit* slightly laterally compressed. *Carpels* with the ribs (3 slender dorsal ones, and 2 in the inner face) bristly, or prickly, with prominent secondary ribs between them bearing prickles; *villæ* solitary below each secondary rib. *Albumen* involute. *Pet.* radiant; those of the ray deeply bifid. (Involucres none, or 1—3-leaved.) — Name: *καυκαλις* of the Greeks, according to Linnæus from *καω*, to lie along, and *καυλος*, a stem, from their trailing along the ground.

\* *Prickles of the secondary ribs in a single row, longer than the bristles of the fruit.*

1. *C. daucoides* L. (*small B.*); leaves bi-tripinnatifid, segments short, umbels of few rays, general involucre none, partial umbels of few flowers, their involucre of about 3 small leaves, prickles of the secondary rib hooked. *E. B. t.* 197.

Corn-fields, on a chalky soil, principally in the east and south-east of England. ☉. 6. — *Peduncles* lateral and terminal. General and partial *umbels* of about 3 rays.

\*\* *Prickles of the secondary ribs in 2—3 rows similar to those of the others.* Turgenia.

2. *C. \*latifolia* L. (*great B.*); hispid, leaves pinnate, leaflets decurrent pinnatifid and serrate, leaves of the involucre ovate membranous, prickles on the fruit all retrorsely scabrous. *E. B. t.* 198. Turgenia Koch.

Fields in a chalky soil, rare. Abundant in Cambridgeshire. ☉. 7. — A very striking plant, and entirely different from the preceding. *Leaves* broad for this tribe of *Umbelliferae* and comparatively little divided. General and partial *umbels* about 3—5, rayed with about as many leaves to the involucre. *Flowers* rose-coloured, large; *fruit* large, and abundantly aculeated.

### 39. TORILIS Adans. Hedge-Parsley. (Tab. III. f. 39.)

*Fruit* slightly laterally compressed. *Carpels* with 3 dorsal

inconspicuous bristly ribs, and 2 in the inner face of the carpels; the interstices scarcely prominent, clothed with prickles, each with a single *vitta*. *Albumen* furrowed. *Pet.* obcordate, outer ones radiant. (Partial involucre of many leaves.) — Name of doubtful origin, perhaps, as Smith suggests, from *τοπεω*, to carve, or emboss; in allusion to the appearance of the fruit.

1. *T. Anthriscus* Gært. (*upright H.*); stem erect branched, leaves bipinnate, leaflets lanceolate incise-serrate attenuate, umbels stalked terminal, involucre of many small subulate leaves. *Caucalis E. B. t.* 987.

Hedges and waste places. ☉. 7—9. — *Stems* 2—3 ft. high. *Fruit* densely clothed with incurved, but not hooked, scabrous bristles.

2 *T. infesta* Spr. (*spreading H.*); leaves bipinnate, leaflets ovate incise-pinnatifid serrated, umbels stalked terminal, general involucre wanting or of one, partial of few subulate leaves. *Caucalis E. B. t.* 1314.

Fields and way-sides, common. ☉. 7—9. — *Fruit* with straight appressed bristles on the primary ridges, and retroscely scabrous spreading hooked ones on the interstices.

3. *T. nodosa* Gært. (*knotted H.*); stem prostrate, umbels lateral simple subsessile, fruit sometimes warted. *Caucalis E. B. t.* 199.

Waste places by road-sides, frequent; especially in dry, gravelly, or chalky soils. ☉. 5—7. — *Leaves* bipinnate; *leaflets* ovate, pinnatifid, segments linear, acute, short. *Umbels* capitate, opposite the base of a leaf. *Flowers* reddish. *Outer fruits* of the umbel most bristly; *inner* ones partially tubercled. In this species the umbel is as simple as in the first section of the Order.

#### 40. ECHINÓPHORA Linn., Prickly Samphire. (Tab. III. f. 40.)

*Fruit* ovate, lodged in a prickly receptacle, with a prickly involucre. *Carpels* with 5 depressed, waved and striated, equal smooth ribs, and simple *vittæ* in the interstices which are covered with a cobweb-like membrane. *Albumen* involute. *Pet.* obcordate, with an inflected point. (Involucre many-leaved.) — Name derived from *εχινος*, a hedgehog, and *φερω*, to bear; in reference to the prickly nature of the plant.

1. *E. spinosa* L. (*Sea-side P.*, or *Sea-Parsnep*); leaves bipinnatifid, the segments trifid subulate spinous, involucre entire spinous. *E. B. t.* 2413.

Sandy sea-shores, Lancashire and Kent. 4. 7. — A very prickly and singular plant, now, we fear, quite lost as a native of Britain. The flowers of the circumference have stamens only, and at length unite by the base, and surround the solitary central fertile one like an involucre.

## ORD. XXXIX. ARALIACEÆ Juss.

*Calyx-tube* adnate in whole or in part with the *ovary*, entire or cleft. *Petals* 4—10, rarely cohering, or none; *æstivation* valvular. *Stamens* equal in number to the petals or twice as many, from the margin of an epigynous disk. *Ovary* 2- or more celled: *ovules* solitary, pendulous, *Styles* as many as cells. *Stigmas* simple. *Fruit* fleshy or dry; of several 1-seeded cells. *Seed* with a fleshy *albumen*, and a minute *embryo*.—Trees, shrubs, or herbs; *nearly allied to Umbelliferæ*. *Panax affords the Ginseng*.

1. ADOXA. Corolla monopetalous, rotate. Stem slender, herbaceous.

2. HEDERA. Corolla of 5 petals. Stem woody.

## 1. ADÓXA Linn. Moschatell.

*Cal.* half-inferior, 3-cleft. *Cor.* superior, rotate, 4—5-cleft. *Stam.* 8—10, inserted by pairs, each bearing a 1-celled *anther*. *Berry* 4—5-seeded. (The side-flowers have the corolla 5-cleft, the terminal one 4-cleft.)—Name: from *a, without*, and *δοξα, glory*; from the humble and insignificant aspect of this little flower.

## 1. A. moschatéllina L. (tuberous M.) E. B. t. 453.

Woods, hedge-banks, and shady places; not unfrequent at a great elevation, and even near the tops of Highland mountains. *Æ.* 4, 5. — *Root* composed of tooth-like scales, creeping. *Stem* about a span high. *Leaves* 2—3, radical, on very long *footstalks*, triternate, lobed and cut, 2 cauline ones small and simply ternate. *Peduncles* terminal, with a head of 4 verticillate *flowers* and a fifth terminal one. *Stamens* united in pairs; or they may be considered as 4—5 forked *stamens*, each ramification terminated by the single cell of an *anther*, and all springing from a fleshy ring that surrounds the upper part of the *germen*.

## 2. HÉDERA Linn. Ivy.

*Cal.* of 5 teeth. *Pet.* 5, distinct, broadest at the base. *Stam.* 5—10. *Style* simple, or 5—10 more or less combined. *Berry* with 3—10 *seeds* crowned by the calyx.—Name supposed to be from *ἔδρα, a seat*, from its clinging to or sitting upon old walls, &c.

1. H. Hélix L. (common I.); leaves coriaceous ovate or cordate and 3—5-lobed, lobes angular, umbel simple pubescent erect. E. B. t. 1267.

Hedges, woods, old buildings, or rocks and trunks of trees, frequent. *h.* 10, 11. — *Stems* very long, throwing out numerous *roots*, by which they adhere to hard substances. *Leaves* very shining, dark green, often veined with whitish lines. *Flowers* small, pale green. *Cal.-teeth* extremely minute. *Pet.* reflexed. *Berries* smooth and black.

ORD. XL. CORNACEÆ *De Cand.*

*Calyx-tube* adnate with the *ovary*; *limb* 4—5-toothed and minute, or 4—5-lobed and valvate in æstivation. *Pet.* 4, broad at the base; æstivation valvular. *Stamens* 4, inserted with the petals. *Style* filiform. *Stigma* simple. *Ovary* 2-celled: *ovules* solitary, pendulous. *Drupe* with a 1—2-celled *nucleus*. *Seeds* with a fleshy *albumen*, and an *embryo* nearly its length.—Trees or shrubs, rarely herbs. Leaves (*except in one species*) *opposite*, and as well as the fruit, *beset with appressed hairs attached by the middle*. Bark tonic.

1. *CÓRNUS* Linn. Cornel, Dogwood.

*Cal.* of 4 teeth. *Petals* 4, superior. *Stam.* 4. *Nut* of the *drupe* with 2 cells and 2 *seeds*.—Named from *cornu* (*keren* in Hebrew), a *horn*; owing to the hard nature of the wood, of which javelins were made.

1. *C. sanguinea* L. (*will C. or D.*); arborescent, branches straight, leaves opposite ovate green on both sides, cymes flat destitute of involucre. *E. B.* t. 249.

Woods and thickets, particularly on a chalk or limestone soil; scarcely wild in Scotland. *h.* 6, 7. — *Stem* 5—6 ft. high. *Bark* in the older *branches* dark red, as are the leaves before they fall; these are strongly nerved, entire, slightly hairy beneath. *Cymes* of numerous white *flowers* at the ends of the branches.

2. *C. Suécica* L. (*dwarf C.*); herbaceous, leaves all opposite ovate glabrous sessile, flowers few umbellate surrounded by a 4-leaved petaloid involucre. *E. B.* t. 310.

Alpine pastures in Northumberland and Scotland, especially in turf bogs on the Highland mountains. *4.* 7, 8. — *Root* creeping. *Stems* about 6 inches high. *Umbel* terminal, from the axil of 2 young branches, which do not exceed the general flower-stalk in height, till the fruit is ripe.

ORD. XLI. LORANTHACEÆ *Juss.*

*Stamens* and *pistils* often separated. *Calyx-tube* adnate with the *ovary*, bracteated at the base; its *limb* entire or lobed: *Corolla* of 4—8 *petals*, or monopetalous, with a valvate æstivation. *Stamens* as many as divisions of the *corolla* and opposite to them. *Ovary* 1-celled. *Ovule* solitary, pendulous. *Style* 1 or none. *Stigma* simple. *Fruit* inferior, succulent. *Albumen* fleshy.—*Parasitical*, mostly tropical Shrubs. Leaves *entire*, generally *opposite*, thick and fleshy, without *stipules*.—The seed sometimes contains 2 or even 3 embryos.

1. *VISCUM* Linn. Mistletoe.

*Barren fl.* Cal. obsolete. *Pet.* 4, ovate, fleshy, united at the base and bearing each a single anther adnate with the upper surface.—*Fertile fl.* Cal. an obscure margin, superior. *Pet.* 4, erect, ovate, very minute. *Stigma* sessile.—Name: *ἴκτος*, Greek, from *gwid*, Celtic, *the shrub*, par excellence, a sacred plant with our ancestors.

1. *V. album* L. (*common M.*); leaves obovate-lanceolate obtuse obscurely 3—7-nerved, branches dichotomous or verticillate, heads of flowers in the axils of an upper pair of leaves. *E. B.* t. 1470.

Parasitic, mostly on apple-trees, very seldom on the oak; frequent in the southern parts of England. On *Acer campestre* in Gloucestershire; and on Lime-trees and Locust-trees (*Robinia Pseudo-Acacia*) in Bedfordshire. Meikleour, Scotland (introduced). *h.* 3—5. —Whole plant of a yellow hue, thick and succulent. The *Mistletoe* was held sacred by the ancient Britons: birdlime is made from its berries and bark.

B. COROLLA MONOPETALOUS.<sup>1</sup> (ORD. XLII.—XLIX.)

ORD. XLII. CAPRIFOLIACEÆ Juss.

*Calyx-tube* adnate with the *ovary*, usually bracteated at the base. *Corolla* regular or irregular; the segments imbricated in *æstivation*. *Stamens* 4—5, alternate with the lobes of the corolla. *Stigmas* 3, nearly sessile or subcapitate at the extremity of a filiform *style*. *Ovary* 3—5-celled. *Fruit* generally a *berry*, 1- or many-celled, 1- or many-seeded, crowned with the persistent lobes of the calyx. *Albumen* fleshy.—Shrubs or Herbs, with *opposite* leaves; *no stipules*. Bark astringent; the flowers of *Sambucus* are purgative.

\* *Stigmas* 3, *sessile*.

1. *SAMBUCUS*. Cor. rotate. Berry 3—4-seeded. Leaves pinnated.
2. *VIBURNUM*. Cor. campanulate or funnel-shaped. Berry 1-seeded. Leaves entire or lobed (never pinnated).

\*\* *Style* 1, *filiform*, with a *subcapitate stigma*.

3. *IONICERA*. Cor. limb irregular. Stam. 5.
4. *LINNÆA*. Cor. limb nearly regular. Stam. 4, didynamous.

<sup>1</sup> The monopetalous orders with a free ovary will be found among the COROLLIFLOREÆ; and CUCURBITACEÆ among the polypetalous division.

1. *SAMBUCUS* Linn. Elder.

*Cal.* limb 5-cleft. *Cor.* rotate, 5-lobed. *Stam.* 5. *Stigmas* 3, sessile. *Berry* 3- or 4-seeded. (*Leaves pinnated.*)—Named from *σαμβυκη*, a musical instrument, in the construction of which this wood is said to have been employed.

1. *S. E'bulus* L. (*dwarf E.* or *Dane-wort*); cymes with 3 principal branches, leaflets lanceolate, stipules foliaceous, stem furrowed herbaceous. *E. B.* t. 475.

Way-sides and in waste places, not uncommon in England and Scotland and Ireland. *h.* 7, 8.—*Stem* 2—3 ft. high, angular and furrowed. *Leaves* pinnate; *leaflets* serrated. *Cymes* large, terminal, purplish. *Anthers* large, purple. *Berries* spherical, black.—The plant has a fetid smell, and is violently purgative.

2. *S. nigra* L. (*common E.*); cymes with 5 principal branches, leaflets ovate or roundish, stipules obsolete, stem arboreous. *E. B.* t. 476.—*β.* leaflets laciniated.

Woods, coppices, &c., frequent. *β.* Leicestershire, and near Ayr. *h.* 6.—A small tree, having the *stems* and *branches* full of pith. *Leaves* pinnate; *leaflets* serrated or laciniated. *Cymes* terminal, large, cream-coloured, smelling unpleasantly.—The bark and flowers are used by country practitioners medicinally, and the fruit is employed for making wines and preserves.

2. *VIBURNUM* Linn. Guelder-rose.

*Cal.*-limb 5-cleft. *Cor.* campanulate or funnel-shaped, 5-lobed. *Stam.* 5. *Stigmas* 3, sessile. *Berry* inferior, usually 1-seeded. (*Leaves simple.*)—Name of doubtful origin.

1. *V. Lantána* L. (*mealy G.* or *Wayfaring-tree*); leaves elliptic with a cordate base serrated veined downy beneath, pubescence stellate. *E. B.* t. 331.

Woods and hedges, especially in a chalky or limestone soil. Dunglass glen, Scotland. *h.* 5, 6.—A large shrub, much branched, the young shoots very downy. *Flowers* in large dense cymes, white. *Cal.*-teeth very minute. *Berry* purplish-black.—The young shoots are much esteemed in the Crimea for the tubes of tobacco pipes.

2. *V. O'pulus* L. (*common G.*); leaves glabrous 3—5-lobed, lobes acuminate and serrate, petioles with glands. *E. B.* t. 332.

Woods and coppices, not unfrequent in England and Scotland. *h.* *Fl.* 6, 7.—A small tree, very glabrous. *Leaves* large, subcordate, broad. *Cymes* large, with white flowers; the perfect ones small and resembling the last; abortive ones in the circumference, consisting of a very large, plane, 5-lobed corolla, without either *stamens* or *pistil*. *Flowers* erect. *Berries* reddish-purple, drooping.

3. *LONICERA* Linn. Honey-suckle. •

*Cal.*-limb small, 5-toothed. *Cor.* tubular or somewhat funnel-

shaped, the limb irregular, 5-cleft. *Stam.* 5. *Style* filiform. *Stigma* capitate. *Berry* 1—3-celled, few-seeded.—Named in honour of *Adam Lonicer*, a German botanist.

1. *L. \* Caprifolium* L. (*pale perfoliate* H.); flowers ringent whorled terminal sessile, leaves deciduous glabrous obtuse, upper ones connate perfoliate, style glabrous. *E. B.* t. 799.

Woods and thickets, rare. Oxfordshire and Cambridgeshire. In Colinton woods and on Corstorphine hill near Edinburgh, and in hedges at Dalmeny, Linlithgowshire. *h.* 5, 6.—*Berries* smooth, of an orange-colour.

2. *L. Periclymenum* L. (*common* H., or *Woodbine*); heads stalked, flowers ringent capitate terminal, leaves all distinct deciduous oval. *E. B.* t. 800.

Frequent in woods and hedges. *h.* 6—9.—*Berries* red.

3. *L. \* Xylosteum* L. (*upright Fly* H.); peduncles 2-flowered downy as long as the flowers, berries distinct except at the base, calyx-limb deciduous, leaves ovate entire downy. *E. B.* t. 916.

Thickets. Hertfordshire. Near Sewenshele, Northumberland. Houghton Bridge near Arundel, Sussex. *h.* 5, 6.—An erect shrub, with pale, yellowish, small, scentless, flowers, succeeded by bright scarlet berries. There being no allied species in this country, we can scarcely suppose that this has not been accidentally naturalized by man or birds.

#### 4. LINNÆ'A Gronov. Linnæa.

*Cal.-limb* 5-cleft. *Cor.* campanulate, 5-cleft, equal. *Stam.* 4, didynamous. *Fruit* a dry, 3-celled berry, with one cell only bearing a perfect seed. *Involucre* of about 4 leaves at the base of the germen.—Name:—It was this "little northern plant, long overlooked, depressed, abject, flowering early," which Linnæus himself selected as therefore most appropriate to transmit his name to posterity. *Sm.*

1. *L. borealis* Gronov. (*two-flowered* L.) *E. B.* t. 433.

Woods in Scotland, especially of Fir, more rarely in open rocky and mossy situations, chiefly in the counties of Perth, Forfar, Inverness, and Aberdeen. Rare and perhaps only naturalized on the south of the Tay; banks of the Esk, at Dalhousie. Hartburn, Northumberland. *h.* 7.—*Stems* trailing, filiform, branched. *Leaves* opposite, broadly ovate, stalked, obscurely crenate. *Peduncles* axillary, long, erect, 2-flowered. *Flowers* fragrant, graceful, drooping; *pedicels*, *bractæas*, *involucre*, globose germen and calyx, all clothed with glandular hairs.



ORD. XLIII. RUBIACEÆ *Juss.*

*Calyx* adherent with the *ovary*, entire or toothed at the margin. *Corolla* regular. *Stamens* inserted upon the corolla and between its divisions. *Style* 1. *Ovary* 1, with 2 or more cells. *Embryo* straight, surrounded by a horny *albumen*. *Radicle* inferior.—Leaves *opposite with interpetiolar stipules or whorled*.—A most important natural family. All the species found in Europe belong to the group called *Stellatæ* or *Rubiaceæ* proper, and have, besides the above characters, a 4—5-lobed corolla, valvular in æstivation, 4—5 stamens, a bipartite or trifid style, 2 capitate stigmas, a 2-celled 2-seeded pericarp, and slender herbaceous square stems with whorled leaves: their roots yield a dye. Those individuals having woody, or shrubby, rarely herbaceous stems, and opposite and stipuled leaves, afford *Peruvian Bark*, in the various species of *Cinchona*; *Gambeer*, in *Nauclea*; a febrifuge, in *Condaminea* and *Rondeletia*; powerful emetics, in *Psychotria* and *Cephaelis*, especially *C. Ipecacuanha*, which is the *true* or *Brazilian Ipecacuanha*, in *Spermacoce* and *Richardsonia*: these, together with *Coffea*, the *Coffee-tree*, &c. are natives of warm climates.

1. RUBIA. Fruit succulent.
2. GALIUM. Cor. rotate. Fruit dry, not crowned by the calyx.
3. SIERARDIA. Cor. funnel-shaped. Fruit dry, crowned with the calyx.
4. ASPERULA. Cor. funnel-shaped. Fruit dry, not crowned with the calyx.

1. RÚBIA *Linn.* Madder.

*Cor.* rotate or campanulate or funnel-shaped, 4—5-cleft. *Stam.* 4—5. *Fruit* a 2-lobed berry.—Named from *ruber*, *red*; from the red dye afforded by its species, especially *Rubia tinctorum*, which produces the true *Madder*, or *Turkey-red* of commerce.

1. *R. peregrina* L. (*wild M.*); leaves 4—6 in a whorl elliptic or lanceolate persistent glossy, the margin and keel rough with reflexed prickles, corolla rotate 5-cleft. *E. B. t.* 851.

Stony and sandy ground, in the south-west of England. Isle of Wight. Anglesea. 4. 6—8.

2. GÁLIUM *Linn.* Bed-straw.

*Cor.* rotate, 4-cleft. *Stam.* 4. *Fruit* a dry, 2-lobed, indehiscent *pericarp*, without any distinct margin to the calyx.—Named from *γαλα*, *milk*; the plant having been used to curdle milk.

\* *Root perennial. Flowers yellow. Fruit glabrous.*

1. *G. vérum* L. (*yellow B.*); leaves about 8 in a whorl linear with revolute margins grooved above, downy beneath, flowers in dense panicles. *E. B.* t. 660.

Dry banks, sandy places, and sea-shores, common. *¶.* 6—9. — Readily distinguished by its yellow *flowers* and linear deflexed *leaves*. According to Lightfoot the inhabitants of some of the Western Isles employ the roots, and principally the bark of them, to dye red; hence the name for the plant *ruadh* or *ruddy*.

2. *G. cruciatum* L. (*Cross-wort B., Mug-wort*); leaves 4 in a whorl ovate 3-nerved hairy, flowers polygamous in small axillary corymbs, peduncles 2-leaved. *E. B.* t. 143.

Hedge-banks and thickets, common. *¶.* 4—6. *Lateral flowers* of each corymb mostly male, fertile ones often 5-cleft; *fruitstalks* deflexed.

\*\* *Root perennial. Flowers white. Fruit glabrous.*

3. *G. saxatile* L. (*smooth Heath B.*); leaves about 6 in a whorl obovate mucronate, stem much branched smooth usually prostrate, panicles corymbose small, pedicels erecto-patent, petals slightly acute, fruit granulated. *E. B.* t. 815.

Heathy spots and hilly and mountainous pastures, abundant; in some places the ground is almost white with it during summer. *¶.* 6—8. — *Plant* turning nearly black in drying, usually small, but occasionally growing among grass and rushes in swampy places and then almost a foot high and sometimes mistaken for *G. uliginosum*. *Leaves* often rough at the margins, of a thickish and rather soft texture. *Fruit*, as Sir J. E. Smith well observes, becoming reddish after the corollas fall, and then, when fertile, granulated on the surface.

4. *G. pusillum* L. (*least Mountain B.*); leaves about 8 in a whorl linear-lanceolate hair-pointed entire lower ones somewhat hairy, stem spreading, panicles terminal few-flowered, pedicels erecto-patent, fruit obscurely granulated, petals somewhat acute. *E. B.* t. 74.

Limestone hills in various parts of England; near Kendal; about Matlock, Derbyshire; near Settle, Yorkshire; also in the counties of Stafford, Lancaster, and Cumberland. Basaltic rock, Antrim; and near the lake of Killarney; Ireland. Ochil and Strathblane hills, and the Forfarshire mountains, Scotland. *¶.* 7, 8. — Closely allied to *G. saxatile*, from which it is sometimes scarcely to be distinguished except by the narrower and more pointed *leaves*. It is not uncommon on the Continent, being usually the plant designated by *G. sylvestre*, *alpestre*, *læve*, *Bocconi*, *supinum*, and *Jussiat*.

5. *G. uliginosum* L. (*rough Marsh B.*); leaves 6—8 in a

whorl linear-lanceolate bristle-pointed, their margins and the stem rough with reflexed prickles. *E. B.* t. 1972.

Wet meadows and sides of ditches.  $\gamma$ . 7, 8. — *Panicles* small, axillary, few-flowered; *branches* erecto-patent. *Fruit* dark-brown, granulated, its stalks erect. Distinguished from the next by the narrower *leaves*, shortly acuminate at their points into a mucro. It does not turn black in drying.

6. *G. palústre* L. (*white Water B.*); leaves 4—6 in a whorl oblong-lanceolate obtuse tapering at the base and as well as the lax spreading branched stem more or less rough, panicles diffuse, fruit-stalks divaricated. —  $\alpha$ . stem and leaves smoothish. *G. palustre E. B.* t. 1857. —  $\beta$ . nerves at the back and margins of the leaves and angles of the stem distinctly rough with mostly reflexed prickles. *G. Witheringii E. B.* t. 2206.

Sides of ditches, lakes and rivulets.  $\gamma$ . 7, 8. — “The transition from the smooth to the rough state of this plant may be observed on the borders of pools; and it is only in very wet spots that it corresponds with the description in *E. Fl.* of *G. palustre*.” — *W. Wilson*.

7. *G. erectum* Huds. (*upright B.*); leaves 6—8 in a whorl lanceolate mucronate their margins rough with prickles pointing forward, branches of the panicle all ascending, stem flaccid, segments of the corolla taper-pointed, fruit-stalks divaricated. *E. B.* t. 2067. *G. aristatum Sm.*; *E. B. S.* t. 2784. —  $\beta$ . leaves narrower. *G. diffusum Don.* *G. cinereum Sm.* (not *All.*): *E. B. S.* t. 2783.

Hedges and pastures, not common. In Norfolk; at Portslade, Sussex; and near Cambridge. Portobello, Dalmahoy, and Slateford, near Edinburgh. Wood, west of Kinnaird mill, Forfarshire.  $\beta$ . Slateford, near Edinburgh; Kinnaird, Forfarshire. *G. Don.*  $\gamma$ . 6.—In all the specimens we have seen the stem is hairy at the very base, but it is sometimes quite glabrous above, although in England it is usually hairy there also, at least on the angles; on account of which Hudson chiefly distinguished it from *G. Mollugo*; but as there is a hairy form of this last species, the only character we can indicate consists in the branching of the panicles. As to our  $\beta$ . we quite agree with Mr. Babington that it is not *G. cinereum* of Allioni, which is rigid and almost woody at the base; and as a somewhat glabrous state of *G. erectum* is found in the vicinity of both the reputed stations, there seems no reason to doubt its belonging to this species.

8. *G. Mollugo* L. (*great Hedge B.*); leaves 6—8 in a whorl oblong-lanceolate or obovate mucronate rough at the margin with prickles pointing forward and lower branches of the panicles spreading horizontally, stem flaccid, segments of the corolla taper-pointed, fruit-stalks divaricated. —  $\alpha$ . stem glabrous, leaves oblong-lanceolate, floral ones small. *E. B.* t. 1673. —  $\beta$ . stem and leaves hairy. —  $\gamma$ . stem glabrous, leaves obovate, floral ones large. *G. Insubricum Gaud.*

Hedges and thickets, less frequent in Scotland. —  $\gamma$ . Winander Mere: Rev. C. A. Stevens.  $\mathcal{U}$ . 7, 8. — Stems very long and straggling, thickened above the joints. Small specimens of this have sometimes the panicle close, when they cannot be distinguished from *G. erectum*, a species it must be confessed not satisfactorily distinct. Dr. Bromfield finds a *var.* in the Isle of Wight with greenish flowers.

\*\*\* Root perennial. Flowers white. Fruit hispid.

9. *G. boreale* L. (*Cross-leaved B.*); leaves 4 in a whorl lanceolate 3-nerved glabrous, stems erect, fruit covered with hooked bristles. *E. B. t.* 105.

Moist rocks, frequent in the north of England, Wales, and Ireland.  $\mathcal{U}$ . 6, 7. — In very shady places and clefts of rocks, the stems are long and straggling. Flowers numerous, crowded, white. Bristles of the fruit hooked.

\*\*\*\* Root annual. Flowers white or greenish.

10. *G. Parisiense* L. (*Wall B.*); leaves about 6 in a whorl lanceolate bristle-pointed rough at the margins with prickles pointing forwards, peduncles axillary their branches divaricated slender subtrichotomous, stems slender rough with decurved prickles. —  $\alpha$ . fruit hispid. *G. Parisiense* L. *G. litigiosum* D.C. —  $\beta$ . fruit glabrous granulated. *G. Anglicum* Huds.: *E. B. t.* 384.

$\beta$ . Walls and dry sandy soils, but rare; in Kent and various parts of the east and south-east of England, especially on old walls.  $\odot$ . 6, 7. — Our *var. \beta*. is the only one found about Paris; but Linnaeus had in view that form with hispid fruit which is found in the south and middle parts of Europe. They do not appear to us to differ.

11. *G. \*saccharatum* All. (*warty-fruited B.*); leaves 6 in a whorl lanceolate their margins rough with prickles pointing forward, peduncles axillary 3-flowered, fruit reflexed warted. *G. verrucosum* *E. B. t.* 2173. *Valantia Aparine* Linn.

Corn-fields, rare. Corn-fields in the Carse of Gowrie, Scotland. Near Malton, Yorkshire.  $\odot$ . 6—8. — Prickles of the stem reflexed. The two lateral flowers on each peduncle are sterile and fall away, one from each side of the large warted fruit, which, together with the marginal prickles of the leaves pointing forwards, essentially distinguish this species from *G. tricornis*. We fear the plant was introduced from the south of Europe with seed-corn; it has not been found for many years.

12. *G. \*spurius* L. (*smooth-fruited Corn B.*); leaves 6—8 in a whorl linear-lanceolate their margins midrib as well as the angles of the stem rough with reflexed prickles, peduncles axillary 3—9-flowered, fruit smooth or hispid, the stalks

divaricated straight. — *a.* fruit smooth. *E. B. t.* 1871. — *β.* fruit hispid. *G. Vaillantii D. C. : E. B. S. t.* 2943.

Fields of corn, clover, and potatoes, rare. *a.* Near Forfar. *β.* Saffron Walden and Chesterfield, Essex; Cambridgeshire. ☉. 7. — Allied to the 2 last species in its short axillary peduncles, but in general habit coming so near to *G. Aparine*, that our *var. β.* is scarcely to be distinguished. *G. spurium* however has small yellowish-green (not white) flowers, a small less hispid fruit, and it does not climb hedges. In general *G. spurium* has numerous flowers on erect peduncles, but sometimes only 3; while *G. Aparine* has usually only 2 or 3, but sometimes more; so that no character can be derived from these. Notwithstanding Mr. Forster's remarks in *E. B. S.* we are therefore of opinion that they differ by too few characters to be distinct species.

13. *G. tricorne* With. (*rough-fruited Corn B.*); leaves 6—8 in a whorl linear-lanceolate their margins midrib and angles of the stem rough with reflexed prickles, peduncles axillary 3-flowered, fruit reflexed granulated. *E. B. t.* 1641.

Dry chalky fields in many counties in England. ☉. 6—10. — *Flowers* all apparently perfect, but the central one only usually fertile.

14. *G. Aparine* L. (*Goose-grass or Cleavers*); leaves 6—8 in a whorl linear-lanceolate hispid their margins midrib and angles of the stem very rough with reflexed prickles, peduncles axillary about 3-flowered, the stalks divaricating straight, fruit hispid. *E. B. t.* 816.

Hedges, abundant. ☉. 6, 7. — *Stem* weak, straggling and climbing among bushes, rarely in corn-fields and then as small as in *G. spurium*. *Flowers* white, usually 2 or 3 together, sometimes 5, on rather short footstalks arising from the axils of the leaves. *Bristles* of the fruit hooked, which by their means catches hold of the coats of animals and is widely dispersed. The seeds have been recommended as a substitute for coffee.

### 3. *SHERARDIA* Linn. *Sherardia* or Field-Madder.

*Cor.* funnel-shaped. *Stam.* 4. *Fruit* crowned with the cal. — Named in honour of *James Sherard*, an English botanist and patron of that science, whose fine garden at Eltham in Kent gave rise to the famous "*Hortus Elthamensis*" of Dillenius.

1. *S. arvensis* L. (*blue S.*); leaves about 6 in a whorl, flowers terminal sessile capitate. *E. B. t.* 891.

Corn-fields, especially in a light gravelly soil, frequent. ☉. 4—10. — A small, slender, branched and spreading plant. *Leaves* obovate-lanceolate, acute, their margins rough, upper ones 7—8, forming an involucre to a small sessile umbel of pale blue flowers. *Cal.* of 4 segments, two opposite ones bifid; these bifid ones correspond to the line

where the *fruit* divides into two 1-seeded portions, each of which is crowned with 3 teeth, one being the single tooth or segment of the *cal.*, the other two, each half of a double one.

4. *ASPÉRULA* Linn. Woodruff.

*Cor.* funnel-shaped. *Stam.* 4. *Fruit* without any distinct margin to the *cal.* — Named from *asper*, rough, owing to the roughness of some species of the genus.

1. *A. odoráta* L. (*sweet W.*); leaves 6—8 in a whorl lanceolate, flowers panicled on long stalks, fruit hispid. *E. B.* t. 755.

Woods and shady places, plentiful. 4. 5, 6. — About 6 inches high, erect. *Flowers* white. Whole plant very fragrant, like *Anthoxanthum*, especially when drying.

2. *A. Cynánchica* L. (*small W.*, *Squinancy-wort*); leaves linear 4 in a whorl very irregular in the uppermost whorls, fruit granular scabrous. *E. B.* t. 33.

Warm banks, especially in chalky countries. Limestone rocks, Swansea, S. Wales. Not found in Scotland. 4. 6, 7. — *Flowers* generally lilac. One pair, in the whorl of the uppermost leaves, is reduced to small lanceolate *stipules*, exhibiting beautifully the real character of the stipules of the shrubby *Rubiaceæ*.

3. *A. \* arvénis* L. (*Field W.*); annual, leaves 6—10 in a whorl linear-lanceolate obtuse, flowers aggregate terminal surrounded by long ciliated bracteas, fruit glabrous. *E. B. S.* t. 2792.

Near Devonport, now extinct. ☉. 6. — *Flowers* bright blue. *Fruit* large and very conspicuous.

(*A. Taurina* L. is mentioned as naturalized in Leicestershire and Westmoreland.)

ORD. XLIV. VALERIANACEÆ Juss.

*Calyx-tube* adnate with the *ovary*; the *limb* toothed, or a thickened margin at the top of the ovary, at length unfolding into a feathery *pappus*. *Corolla* with 3—6 lobes. *Ovary* with 1 perfect cell and often 2 or 3 abortive ones. *Fruit* dry, indehiscent, 1-seeded. *Seed* pendulous.—Leaves *opposite*, *without stipules*.—Tonic and bitter herbs; the roots, used as Vermifuges, have a powerful scent; those of *Nardostachys Jatamansi* constitute the Spikenard of the ancients.

1. CENTRANTHUS. *Stam.* 1. *Cor.* spurred. *Fruit* with a feathery pappus.
2. VALERIANA. *Stam.* 3. *Cor.* gibbous. *Fruit* with a feathery pappus.
3. FEDIA. *Stam.* 3. *Cor.* gibbous. *Fruit* crowned with unequal teeth.

1. *CENTRÁNTHUS* *De Cand.* Spur-Valerian.

*Cor.* 5-cleft, spurred at the base. *Stam.* 1. *Fruit* crowned with a feathery pappus.—Named from *κεντρον*, a spur, and *ανθος*, a flower.

1. *C. \* ruber* D C. (*Red S.*); leaves ovate-lanceolate, spur much shorter than the tube of the corolla and twice as long as the ovary. *Valeriana* L.: *E.B.* t. 1531.

Chalk-pits and old walls in Kent, Isle of Wight, &c. 4. 6—9 — *Stem* 1 ft. or more high, glabrous, slightly glaucous. *Leaves* entire or slightly toothed. *Flowers* fine deep rose colour or white, arranged in numerous unilateral cymose spikes. Its native country is the extreme south of Europe, and N. of Africa.

(*C. Calcitrapa* Duf. has been naturalized at Eltham in Kent.)

2. *VALERIANA* *Linn.* Valerian.

*Cor.* 5-cleft, gibbous at the base. *Stam.* 3. *Fruit* crowned with a feathery pappus.—Named from *valeo*, to be powerful, on account of the medicinal effects.

1. *V. dióica* L. (*small Marsh V.*); flowers imperfectly diœcious, root-leaves ovate-spathulate stalked, those of the stem lyrate-pinnatifid, fruit glabrous. *E. B.* t. 628.

Marshy meadows, frequent. 4. 5, 6. — *Root* creeping. *Stem* 6—8 inches high. *Leaves* more or less serrated. *Flowers* of a pale rose-colour.

2. *V. officinális* L. (*great wild V.*); stem sulcate stoloniferous, leaves all pinnatifid, leaflets lanceolate nearly uniform. *E. B.* t. 69 — *α.* petioles erecto-patent, leaflets 7—10 pairs dentate-serrate or entire. *V. procurrens* Wallr. *V. angustifolia* Tausch. — *β.* lower and middle petioles erect close-pressed, leaflets 4—5 pairs dentate-serrate. *V. sambucifolia* Mik.

Ditches, sides of rivers and moist woods, abundant. 4. 6—8. — *Roots* tuberous, warm, aromatic, and employed in medicine: cats are very fond of them, and their scent attracts rats. The leaves are much used by the poor as an application to fresh wounds, whence the common name of *All-heal*. Whole plant 2—4 ft. high. In our British forms the stems are perhaps always solitary from each root; but if *V. uliginosa* Wend. be also a var., they are sometimes tufted. Lower leaves on long footstalks. *Flowers* pale flesh-coloured. *Fruit* glabrous or pubescent.

3. *V. \*Pyrenáica* L. (*heart-leaved V.*); leaves heart-shaped dentate-serrate petiolate, upper ones with one or two pair of small lanceolate leaflets. *E. B.* t. 1591.

Woods in Scotland. 4. 6, 7. — It is peculiar to the Pyrenées, but much cultivated in gardens; and the seeds are easily transported by the wind.

## 3. FÉDIA Vahl. Corn-Salad.

*Cor.* gibbous at the base; the limb 5-cleft. *Stam.* 2—3. *Caps.* crowned with unequal teeth, indehiscent, 3-celled, 1-seeded; 2 cells abortive or empty, rarely confluent. (*Limb* of *cor.* equal, and *stam.* 3 in all the British species.) — Name given by Adanson, and supposed to be derived from *fedus* (the same as *hædus*), a *kid*, on account of the smell.

\* *Fertile cell of fruit with a corky mass at the back.*

1. *F. olitória* Vahl (*common C.*, or *Lamb's Lettuce*); fruit laterally compressed oblique crowned with the 3 obscure inflexed teeth of the calyx, fertile cell corky at the back, sterile ones usually confluent, flowers capitate, bracteas leafy ciliatodentate. *Valeriana Locusta* L.: *E. B.* t. 811.

Banks and corn-fields, especially in a light soil. ☉. 4—6. — *Stem* 3 inches to a foot high, dichotomous, more or less rough. *Root-leaves* spatulate; those of the *stem* oblong, obtuse, entire or the upper ones a little toothed. *Flowers* pale blue, or rarely white, in terminal compact heads, at the base of which are linear-oblong often divided *bracteas* forming a kind of *involucre*. — Frequently cultivated as a salad.

\*\* *Fertile cell not corky at the back.*

† *Empty cells conspicuous contiguous.*

2. *F. carinata* Stev. (*carinated C.*); capsule oblong with a wide usually concave groove in front glabrous crowned with the short straight bluntish limb of the calyx, the two empty cells thin and incurved at the edge, cymes capitate. *E. B. S.* t. 2810.

Church Stretton, Shropshire; and between Gresford and Wrexham. Jersey. ☉. 4—6.

3. *F. Auricula* Gand. (*sharp-fruited C.*); capsule ovate acuminate, with a narrow groove in front glabrous crowned with the single entire or 3-toothed limb of the calyx, empty cells rounded on the back, larger than the fertile one, cymes lax. —  $\alpha$ . calyx-limb nearly entire. *E. B. S.* t. 2809. —  $\beta$ . calyx-limb acutely 3-toothed. *F. tridentata* Stev. *Valerianella dentata* DC.

Corn-fields, near Hastings; near Bourton on the water; Henbury, near Bristol; Devon; Isle of Wight. Jersey. Fifeshire. —  $\beta$ . Landedulph, Cornwall: *Rev. R. T. Bree*. ☉. 6—8. — Habit of the last species, for which it is no doubt often passed over; but the *fruit* is quite different, being broader and more inflated, obscurely furrowed in front, crowned with the small limb of the *calyx*, and with large empty cells.

†† *Empty cells distant, obsolete or reduced to mere ribs.*

4. *F. dentata* Vahl? (*smooth narrow-fruited C.*); capsule



ovate flattish and 2-ribbed in front acuminate crowned with the prominent oblique unequally toothed calyx.—*α*. capsule glabrous, cup of the calyx small very oblique. *Valeriana Sm.*: *E. B. t.* 1370. *Valerianella Morisonii DC.*—*β*. capsule clothed with spreading incurved rigid hairs, cup of the calyx small oblique. *F. mixta Vahl.*—*γ*. capsule clothed with spreading incurved rigid hairs or glabrous, cup of the calyx large, a little oblique. *F. eriocarpa Roem. et Sch.*

*α*. Corn-fields and hedge-banks, not very common. Cornwall, Essex, Shropshire, and Cambridgeshire. N. Wales. Fifeshire. Jersey.—*β*. Hedge-banks, near Halesworth, Suffolk; Yorkshire; Isle of Wight. Fifeshire.—*γ*. Ormeshead, Caernarvonshire. ☉. 6—8.—*Flowers* flesh-coloured, usually in panicle cymes. *Fruit* obpyriform; convex on the back where is the larger and perfect cell, nearly plane in front where are the two abortive cells, and these are shrunk so as to form two projecting lines or ribs. The whole fruit is glabrous or nearly so in *α*; in *β*. and usually in *γ*. it is clothed with patent incurved short hairs. In *γ*. the cymes are usually dense, but Mr. W. Wil-on has satisfied us that it is merely a state of this species; Mr. Borrer observes, however, that it has kept its peculiar habit six years in his garden. It is quite impossible, from Vahl's description, to pronounce whether this or *F. Auricula β*. be his *F. dentata*.

#### ORD. XLV. DIPSACACEÆ *Juss.*

*Calyx-tube* adnate with the *ovary*, surrounded by a scarious *involucl* closely investing the ovary and ripe fruit. *Corolla* with the *limb* oblique, with an imbricated æstivation. *Stamens* 4—5; *anthers* distinct. *Ovary* 1-celled. *Style* 1, filiform. *Fruit* dry, indehiscent, 1-celled, with one pendulous *seed*, crowned with the pappus-like calyx. *Albumen* fleshy.—*Mostly* herbaceous plants, with *opposite* or *whorled* leaves. *Flowers* *pedicellate*, collected into a dense head which is surrounded by a many-leaved *involucre*. *Nearly allied* to the *Compositæ*. The Fuller's Teasel consists of the heads, with uncinatè spines, of *Dipsacus Fullonum*.

1. DIPSACUS. Receptacle with spinous scales. Cal. cup-shaped. Fruit with 8 depressions.
2. SCABIOSA. Receptacle scaly. Cal. of about 5 bristles.
3. KNAUTIA. Receptacle hairy (not scaly). Cal. cup-shaped. Fruit with 4 depressions.

##### 1. DIPSACUS *Linn.* Teasel.

*Receptacle* with spinous scales. *Involucl* with a thickened limb, forming a crown to the ovary. *Cal.* cup-shaped. *Stam.* distinct about equal. *Fruit* 4-angled, with 8 pores or depressions. (*Leaves* opposite.)—Named from δῖψας, to be thirsty; the upper connate leaves containing water in their hollows.

1. *D. \*Fullónum* L. (*Fuller's T.*); leaves sessile undivided, scales of the receptacle hooked at the extremity, involucre spreading or reflexed. *E. B. t.* 2080.

Waste places and hedge-banks; rare. ♂. 8, 9. — *Stem* 4—5 ft. high, very angular and prickly. *Leaves* large, oblong or oblong-lanceolate, obtusely and irregularly serrated, sometimes, especially the upper ones, connate. *Involucre* about as long as the head of flowers. *Flowers* in oval heads, pale purple or whitish. — Used in dressing cloth, for which purpose the hooked scales of the receptacle are admirably calculated. These hooks become obsolete by long cultivation on a poor soil; and there is reason to believe that *D. Fullonum* is but a var. of *D. sylvestris*.

2. *D. sylvestris* L. (*wild T.*); leaves sessile undivided, upper ones connate, scales of the receptacle straight at the extremity, involucre curved upward. *E. B. t.* 1032.

Road-sides and hedges, not rare in England; less frequent in Scotland. ♂. 8, 9.

3. *D. pilósus* L. (*small T.*); leaves petiolate with a small leaflet at the base on each side, involucre shortly deflexed. *E. B. t.* 877.

Moist hedges, but not common. In several places in Norfolk and Suffolk, Sussex and Surrey. Rare in Scotland. ♂. 8, 9. — *Stem* slender, 2—4 ft. high, angular, rough with short reflexed prickles, which are longer and resembling bristles on the peduncles. *Leaves* ovate, acuminate, serrated. *Heads of flowers* rather small, round, hairy. *Scales* of the receptacle obovate-cuspidate, straight. *Corolla* white. *Anthers* white, much protruded.

## 2. SCABIÓSA Linn. Scabious.

*Receptacle* scaly. *Involucel* membranaceous or minute. *Cal.* of about 5 bristles. *Stam.* distinct, nearly equal. *Fruit* with 8 depressions. — Named from *scabies*, the *leprosy*; an infusion or decoction of some of the species having formerly been employed in curing cutaneous diseases.

1. *S. succísa* L. (*Devil's-bit S.*); segments of corolla 4 nearly equal, fruit angled with the depressions reaching nearly to the base and a very short crown, calyx-bristles conniving, cauline leaves dentate, heads of flowers nearly globose, leaves of the involucre in 2—3 rows. *E. B. t.* 878.

Meadows and pastures, common. 2. 7—10. — *Root* as it were cut off abruptly or bitten (*radix præmorsa*). *Stems* nearly simple. *Leaves* hairy, rather stiff; *radical* ones ovate, mostly petiolate, those of the stem oblong. *Flowers* purplish-blue, or white.

2. *S. columbária* L. (*small S.*); corollas usually 5-cleft radiating, fruit subcylindrical with the depressions reaching to the base, limb of the involucel membranaceous entire patent

about 20-nerved half the length of the fruit, stem hairy, radical leaves ovate crenate or lyrate, those of the stem pinnatifid with linear segments. *E. B. t.* 1311.

Pastures and waste places, most abundant on the east coast. Rare in Scotland; near Arbroath, with white fl.; plentiful near Montrose, and at Blackford; Berwickshire. *¶*. 7, 8. — Scarcely a ft. high, hairy. Lower leaves on rather long foot-stalks; cauline ones cut into narrow, linear, or setaceous pinnæ. Flowers purplish-blue. Involucre of narrow leaves, longer than the flowers.

### 3. *KNAÜTIA* Linn. *Knaütia*.

*Receptacles* hairy, without scales. *Involucel* with a 4-toothed minute limb. *Cal.* cup-shaped with radiating teeth. *Stam.* distinct, nearly equal. *Fruit* upon a short stalk, 4-angled, with 4 pores or depressions. — Named in honour of *Christopher Knaut*, a botanist of Saxony, who flourished in the latter half of the 17th century.

1. *K. arvensis* Coult. (*Field K.*); heads of many flowers, fruit crowned with very minute teeth, calyx with 8—16 somewhat awned cilia. *Scabiosa L. : E. B. t.* 659.

Pastures and corn-fields, frequent. *¶*. 6—8. — *Stem* 2—3 ft. high. Radical leaves lanceolate, slightly serrated, hairy. Heads of flowers large, convex, lilac-purple; outer florets large, with their segments unequal, so that the lower ones form a sort of ray around the head; inner florets with equal segments.

## ORD. XLVI. COMPOSITÆ Juss. (Tab. III. A., and Tab. IV. and V.)

*Calyx* adherent with the ovary, the limb entire or toothed or mostly expanded into a *pappus* which crowns the fruit. *Corolla* regular or irregular, filiform or tubular or ligulate, very rarely wanting. *Stamens* 5: *anthers* syngenesious in the perfect florets, furnished at the apex with a more or less evident *appendage*, and at the base with 2 bristles or spurs, or without any (*ecaudate*). *Ovary* 1. *Style* 1, sheathed in the perfect florets by the tube of the *anthers*, bifid at the apex when fertile. *Stigmus* forming two longitudinal rows along the inner surface of each branch of the style. *Fruit* an *achene* tapering to a beak, or without one, with a small or large epigynous disk. *Seed* erect, without *albumen*. *Embryo* straight. *Radicle* opposite the *hilum*. — *Stems, in the British genera, herbaceous*. Leaves *opposite or alternate*. Flowers or florets<sup>1</sup> collected into a head

<sup>1</sup> When all the florets are perfect (containing both anthers with pollen and a fertile pistillum), the heads are said to be *homogamous* (as in *Leontodon*, *Carduus*, and *Diotis*); when some only of the florets are perfect, the heads are *heterogamous* (as in *Centaurea*, *Cyanus*, *Gnaphalium*, and *Bellis*); when all the florets are alike,

(compound flower, L.), *inserted upon a broad receptacle* (which is either furnished with chaffy scales or naked) and surrounded by an involucre (calyx, L.). The properties in so extensive an Order are very varied; but, generally speaking, those of—  
 Tribe 1. CICHORACEÆ, are bitter and narcotic, abounding in milky juice. — Tribe 2. CYNAROCEPHALÆ, bitter and tonic. —  
 Tribe 3. CORYMBIFERÆ, aromatic, stimulant, containing bitter principle and essential oil.

This is one of the most extensive and natural of all the families of plants, and consequently difficult of arrangement and investigation. By Linnæus the class *Syngenesia* (or *Compositæ*) is divided into groups, from very simple characters, and though acknowledged to be an artificial system, yet the grouping is almost a natural one. The Sub-orders or Tribes of Jussieu are quite natural, not only in general aspect, but general properties. The arrangement of Cassini, Lessing, and De Candolle is equally natural with that of Jussieu, but far more difficult of application, from the circumstance of the primary characters being taken from the minute stigmas of the perfect flowers. That of Jussieu is, therefore, here by preference adopted. The genus *Xanthium* (Tab. v.) with no corollas to the fertile florets, the florets in the same head of flowers with stamens or pistils only, and the heads monœcious, is so anomalous that we have inserted it at the end, yet in connection with the *Corymbifera*.

# I. Florets all ligulate and perfect. CICHORACEÆ.

\* *Pappus of all, or of the central florets, plumose.*

† *Receptacles naked.*

1. **TRAGOPOGON.** Involucre single of 8—10 connected scales.
2. **HELMINTHIA.** Involucre with external foliaceous scales. Achenes beaked.
3. **PICRIS.** Involucre with external small scales. Achenes scarcely beaked.
4. **APARGIA.** Involucre unequally imbricated. Pappus of all the achenes plumose.
5. **THIRINCLA.** Involucre unequally imbricated. Pappus of outer achenes short and scaly.

†† *Receptacles with chaffy scales.*

6. **HYPOCHÆRIS.** Involucre unequally imbricated.

having either fertile stamens, or a fertile pistillum, but not both, the heads are diœcious, and then they may be on the same individual (as in *Xanthium*), or on different ones (as in *Antennaria*), when the genus or species is itself monœcious or diœcious; when some of the florets in a head have fertile stamens but not a fertile pistillum in the disk, while those of the circumference have a fertile pistillum, the heads are said to be monœcious; and when the heads are monœcious, and one individual bears heads with numerous staminate and few pistillate florets, and another numerous pistillate and few staminate florets, the genus is said to be sub-diœcious (*Petasites*). When all the florets are similar in colour, they are said to be homœochromous (as in *Solidago*, and *Inula*): when the ray is of a different colour from the disk, they are heterochromous (as in *Bellis*).

**\*\* *Pappus pilose, filiform.***

**† *Achenes much compressed.***

7. LACTUCA. Beak of achenes filiform. Pappus very soft and flaccid. Invol. few-flowered.
8. MUGLEDIUM. Beak very short, constricted between the achene and the disk. Pappus stiff and brittle. Involucre many-flowered.
9. SONCHUS. Beak 0. Pappus very soft and flaccid. Invol. many-flowered.

**†† *Achenes nearly terete, or angled.***

10. CREPIS. Pappus nearly white, soft, deciduous. Achenes without a beak, or with a very short one, longitudinally striated.
11. BORKILÆSIA. Pappus white, soft, deciduous. Beak long. Involucre of fruit oval, erect, ribbed and furrowed.
12. LEONTODON. Pappus white, soft, deciduous. Beak long. Invol. of fruit reflexed.
13. HIERACIUM. Pappus brown, brittle. Beak 0.

**\*\*\* *Pappus neither filiform nor plumose. Receptacle naked.***

14. LAPSANA. Pappus none, or a mere rim to the achene.
15. CICHORIUM. Pappus of all the florets of erect scales.

**II. Florets all tubular, homogamous, or those of the ray neuter.  
Style swollen below its branches. CYNAROCEPHALÆ.**

**\* *Scales of the involucre with a hooked point. Achenes glabrous.***

16. ARCTIUM. Anthers with 2 bristles at the base; appendages filiform.

**\*\* *Scales of the involucre not hooked at the point.***

**† *Pappus of several rows, conspicuously unequal; inner row the longest, much longer than the glabrous achene.***

17. SEBRATULA. Pappus pilose, hairs filiform. Anthers ecaudate at the base; appendages obtuse.
18. SAUSSUREA. Inner pappus plumose, hairs thickened at the base. Anthers with 2 bristles at the base; appendages long, acute.

**†† *Pappus equal, long; hairs united at the base into a ring. Achenes glabrous.***

19. CARDUS. Pappus pilose. Achenes compressed. Receptacle bristly. Anthers without bristles.
20. CNIUS. Pappus plumose. Achenes compressed. Receptacle bristly. Anthers without bristles.
21. OSORORDUM. Pappus pilose. Achenes 4-ribbed. Receptacle honey-combed. Anthers shortly caudate at the base.

**††† *Pappus single, long, plumose; hairs unequally united at the base. Achenes silky.***

22. CARLINA. Inner scale of invol. long, coloured and radiating. Anthers bicaudate; appendages long.

**†††† *Pappus 0, or short (equal to, or shorter than the achenes).***

23. CENTAUREA. Ray frequently without stamens or pistils.

III. Florets of the same head all homogamous (and usually tubular); or those of the circumference filiform or tubular and pistilliferous, or ligulate. Style of the perfect florets not swollen below its branches. **CORYMBIFERÆ.**

1. *All the florets with corollas. Involucre not prickly.*

\* *Pappus of 2—5 persistent awns.*

24. **BIDENS.** Receptacle with scales. Achenes compressed or angular.

\*\* *Pappus 0, or a mere border, or of short teeth or scales only.*

† *Receptacle with scales. Pappus 0.*

45. **ANTHEMIS.** Heads heterogamous, with a ray. Florets of the ray oblong-linear. Achenes terete, or obscurely angled.

45\*. **ANACYCLUS.** Heads heterogamous, with a ray. Florets of the ray oblong-linear. Achenes compressed, winged at the edges.

46. **ACHILLEA.** Heads heterogamous, with a distinct ray. Florets of the ray, short obovate. Achenes compressed.

25. **DIOTIS.** Heads homogamous, discoid. Florets and achenes compressed.

†† *Receptacle without scales.*

42. **BELLIS.** Heads heterochromous. Florets of the ray ligulate, conspicuous. Scales of the invol. nearly equal in length. Achenes compressed; epigynous disk minute.

27. **ARTEMISIA.** Heads discoid, homochromous; ligulate florets, when present, short or filiform. Invol. imbricated. Achenes with a minute epigynous disk.

26. **TANACETUM.** Heads discoid homochromous and homogamous, or the florets of the circumference with a short ligule. Achenes with a large epigynous disk.

44. **MATRICARIA.** Heads heterochromous, florets of the ray conspicuously ligulate, of the disk terete. Achenes of the disk and ray similar, angled. Epigynous disk large.

43. **CHRYSANTHEMUM.** Florets of the ray conspicuously ligulate, of the disk compressed at the base. Achenes of the disk somewhat terete. Epigynous disk large.

\*\*\* *Pappus pilose. Heads discoid. Florets all perfect.*

28. **EUPATORIUM.** Style much exerted, with long blunt branches. (Flowers never yellow.)

29. **LINOSYRIS.** Style slightly longer than the cor. Invol. loosely imbricated, or of one row of equal scales, surrounded by several long ones. Achenes compressed. (Flowers yellow.)

37. **SENECIO.** Style slightly longer than the cor. Invol. cylindrical or conical, of one row of equal scales with several small ones at the base. Achenes terete.

\*\*\*\* *Pappus pilose. Heads discoid. Florets of the circumference, or all, imperfect.*

30. **ANTENNARIA.** Dioecious. Heads dioecious. Invol. imbricated, dry and scarious.

31. **GNAPHALIUM.** Heads heterogamous, all similar. Invol. imbricated, dry and scarious. Recept. flat and quite naked.

32. *FILAGO*. Heads heterogamous. Invol. imbricated, dry and scarious. Recept. conical, with 1-5 rows of scales among the outer florets.
40. *INULA*. Heads heterogamous. Invol. imbricated, herbaceous. Florets of the ray in a single row, with a narrow ligule. Anthers without bristles at the base.
5. *ERIGERON*. Heads heterogamous. Invol. imbricated in several rows. Florets of the ray in several rows, with a narrow ligule. Anthers without bristles at the base.
33. *PETASITES*. Subdicacious. Heads monœcious. Invol. in a single row, herbaceous, with one external row of scales. Fertile florets filiform, truncated.
- 33a. *HOMOGYNE*. Heads heterogamous, with a single row of filiform pistillate florets in the circumference. Involucre in a single row, with an external row of scales. Style with long papillose branches. Anthers without bristles at the base.
- \*\*\*\* *Pappus of the florets of the disk pilose. Heads heterogamous, with a conspicuous ligulate ray.*
- † *Anthers almost naked at the base.*
- ‡ *Florets of the ray with a pilose pappus.*
34. *TUSSILAGO*. Florets of the ray in many rows. Invol. nearly simple. Achenes terete. (Florets homochromous.)
35. *ERIGERON*. Florets of the ray in several rows. Invol. evidently imbricated. Achenes compressed. (Florets heterochromous.)
36. *ASTER*. Florets of the ray many in a single row. Invol. imbricated. Achenes compressed. (Florets heterochromous.)
37. *SOLIDAGO*. Florets of the ray few (about 5) in a single row. Invol. much imbricated. Achenes terete.
38. *SENECIO*. Florets of the ray in a single row. Invol. subcylindrical, of one row of equal scales, with or without smaller ones at its base. Achenes terete.

‡‡ *Florets of the ray without a pappus.*

39. *DORONICUM*. Scales of the invol. of 2-3 rows, nearly equal. Achenes terete.
- †† *Anthers with 2 bristles at the base. Florets of the ray in a single row.*
40. *INULA*. Pappus in a single row, pilose.
41. *PULICARIA*. Pappus in 2 rows; outer row short, cup-like, membranous, toothed; inner pilose.

2. *Fertile florets without cor. Heads monœcious. Fertile invol prickly.*

47. *XANTHIUM*. Monœcious. Fertile invol. 2-flowered. Pappus 0.

Tribe I. CICHORACEÆ. Chicory or Lettuce Tribe.  
(Tab. III. A.)

All the florets with ligulate corollas and perfect (having both stamens and pistils). Style not swollen beneath its branches. Gen. 1-14.<sup>1</sup>

<sup>1</sup> At Tab. III. A. is a very familiar example of this group in the *Dandelion* (*Leontodon Taraxacum*) where all the flowers or florets (1.2) are ligulate or strap-shaped and perfect.

Fig. 1. Head of flowers in bud, the young involucre alone being visible.

\* *Pappus* of all or of the central florets plumose. (Gen. 1—6.)

1. *TRAGOPÓGON* *Lim.* Goat's-beard.

*Achenes* longitudinally striated, beaked. *Pappus* feathery. *Recept.* naked. *Invol.* simple, of 8—10 scales united at the base. — Named from *τραγος*, a goat; and *πῶγων*, a beard; from the beautifully bearded fruit.

1. *T. pratensis* L. (*yellow G.*); glabrous, involucre about as long or twice as long as the corollas, leaves undivided acuminate from a dilated base channelled, peduncles slightly thickened at the very summit. — *α.* involucre about as long as the corollas. *E. B.* t. 434. — *β.* involucre twice as long as the corollas. *T. minor* *Fries.* *T. major* *Hook. Br. Fl.* ed. 2. (not perhaps of *Jacq.*)

Meadows and pastures. Scotland. Ireland. ♂. 6, 7. — *Stem* 1—2 ft. high. *Leaves* of *β.* more attenuated than in *α.* *Invol.* 8-leaved. *Flowers* yellow, closing every day before noon; head of fruit large. *Achenes* of the florets of the circumference striated and squamously scabrous in this and the the next. *Pappus* very feathery, elevated on a long stalk.

2. *T. \*porrifolius* L. (*purple G. or Salsafy*); involucre longer than the corollas, leaves undivided straight acuminate slightly dilated above the base, peduncles much thickened upwards. *E. B.* t. 638.

Moist meadows, in several parts of England; but very local. About Glasgow. ♀. 5, 6. — *Stem* 3—4 ft. high. *Flowers* large, purple, closing before noon, or in rainy weather. The root was formerly cultivated for culinary purposes.

2. *HELMINTHIA* *Juss.* Ox-tongue.

*Achenes* transversely striated, beaked. *Pappus* feathery. *Recept.* naked. *Invol.* double; inner of 8—10 close scales, outer of 3—5 shorter, lax, leafy ones. — Name: *ελμινθιον*, a small kind of worm; from the form of the fruit.

1. *H. echinoides* *Gærtn.* (*bristly O.*); outer scales of the in-

Fig. 2. A single flower or floret, removed from the receptacle, showing (at *a*) the ligulate corolla; (*b*) the germen (ovary or young fruit) covered with the tube of the calyx, which is lengthened above, in a curious manner, into a little stalk or beak, and crowned with the pappus or seed-down, which is, in fact, the limb or free portion of the calyx, within which the corolla is inserted; (*c*) the stamens, the filaments of which are inserted into the lower or tubular portion of the corolla, and the five anthers are united into a tube around the style; (*d*) the style, continued from the top of the germen, through the corolla and united stamens, dividing into two branches, which bear the minute stigmas. This style is not swollen, as in the Thistle group.

Fig. 3. Extremity of the style.

Fig. 4. A receptacle, with the involucre bent back in age, and all the fruit seed-vessels having fallen away but one.

Fig. 5. A fruit laid open, showing the erect seed in the cavity or cell. All but figs. 1. and 2. more or less magnified.



volucre 5 cordate crenate, stem erect hispid. *Picris* L.: *E. B.* t. 972.

Borders of fields, especially in a clayey soil. In Scotland, near Berwick-upon-Tweed, very rare. About Dublin.  $\mathcal{L}$ . 6—10. — Stem 2—3 ft. high, stout, hispid, with numerous rigid hairs, springing from tubercles. Lower leaves lanceolate; upper ones cordate, amplexicaul. Flowers small, yellow.

### 3. *PÍCRIS* Linn. *Picris*.

*Achenes* transversely striated, with scarcely any beak. *Pappus* with the inner hairs feathery. *Recept.* naked. *Invol.* of many compact, upright, equal scales, with several external small linear ones. — Name: *πικρος*, bitter, as are many of this tribe.

1. *P. hieracioides* L. (*Hawk-weed P.*); stem rough with hooked bristles, leaves lanceolate rough toothed, flowers corymbose, peduncles with many bracteas, outer scales of the involucre linear-oblong lax bristly on the keel. *E. B.* t. 196.

Road-sides and borders of fields, frequent.  $\mathcal{L}$ . 6—10. — Not found in Scotland. Stems 2—3 ft. high. Flowers yellow. *Pappus* of the marginal and central florets alike.

### 4. *APÁRGIA* Schreb. Hawkbit.

*Achenes* beaked. *Pappus* feathery. *Recept.* naked. *Invol.* unequally imbricated, with hirsute black scales. — Name: *απαργία*, some uncertain weed known to the Greeks which sprung up *απο*, from, *αργία*, the idleness of the cultivator.

\* *Pappus* with an outer row of bristles.

1. *A. hispida* Willd. (*Rough H.*); scape single-flowered thickened upwards slightly hispid naked or with 1—2 minute scales, leaves runcinate hispid with forked hairs, flowers drooping in bud, involucre hairy. Hedypnois *Huds.*: *E. B.* t. 554. *Leontodon* L.

Meadows, pastures, and gravelly heaths, frequent.  $\mathcal{L}$ . 6—9.

\*\* *Pappus* simple. (*Oporinia* Don.)

2. *A. autumnális* Willd. (*autumnal H.*); scape scaly upwards, leaves lanceolate toothed or pinnatifid nearly glabrous, peduncles swollen beneath the involucre. —  $\alpha$ . leaves nearly glabrous, scape branched, involucre somewhat downy. Hedypnois *E. B.* t. 830. *Oporinia* Don. —  $\beta$ . leaves glabrous, scape almost simple, involucre clothed with blackish hairs. Hedypnois *Taraxaci* *E. B.* t. 1109. —  $\gamma$ . leaves hairy, scapes branched, involucre with dark hairs.

Meadows and pastures, frequent.  $\beta$ . on mountains.  $\gamma$ . in High-

land glens. 4. 8. — *Involucre* cylindrical, and tapering gradually into the *pedicel*. *Flowers* moderately large yellow. *Pappus* brownish-white.

# 5. *THRÍNCIA* Roth. *Thrinicia*.

*Achenes* tapering into a beak, the outer ones enveloped by the leaves of the involucre. *Pappus* of the marginal florets forming a short scaly cup, of the rest long, feathery. *Recept.* naked. *Invol.* imbricated. — Name: *Σπρυκος*, a *battlement*; from the resemblance of the seed-crown of the marginal florets to the battlements of a wall.

1. *T. hirta* Roth (*hairy T.*); leaves lanceolate sub-sinuate-dentate somewhat hispid with frequently forked hairs, scapes single-flowered ascending glabrous below. *Hedynois E. B.* t. 555.

Gravelly pastures and moors. 4. 7, 8. — In small starved specimens, the *leaves* are frequently runcinate. Scales of the *involucre* glabrous, or more or less hairy. The outer *pericarps*, which have *scales* for a *pappus*, are often abortive and smooth; the inner ones are beautifully striated and marked with raised dots.

# 6. *HYPOCHÆRIS* Linn. Cat's-car.

*Achenes* striated, often beaked. *Pappus* feathery. *Receptacle* chaffy. *Involucre* oblong, imbricated. — Name from *ὑπο*, *for*, and *χοιρος*, a *hog*; the roots being eaten by that animal.

\* *Pappus* with one entire row of scabrous hairs.

1. *H. glabra* L. (*smooth C.*); nearly glabrous, involucre oblong regularly imbricated equalling the florets, achenes of the central florets beaked, stem branched somewhat leafy, radical leaves dentate-sinuate. — *α.* achenes of the circumference without a beak. *E. B.* t. 575. — *β.* achenes of the circumference beaked. *H. Balbisii* Loisel.

Fields and gravelly soils in many places, but not very common. *β.* In Kent and Shropshire. ☉. 6—10. — *Stem* 1 ft. or more high. *Leaves* oblong, slightly hairy. *Flowers* small, yellow. The *var. β.* may be a distinct species; but we have not seen British specimens, and our foreign ones are not sufficiently numerous to enable us to decide.

\*\* *Pappus* in a single row.

2. *H. radicata* L. (*long-rooted C.*); stem branched leafless glabrous, peduncles with small scales, involucre shorter than the florets, leaves runcinate obtuse scabrous. *E. B.* t. 831.

Meadows, pastures and way-sides, frequent. 4. 7. — *Leaves* all radical, spreading on the ground. *Stem* 1 ft. or more high. *Peduncles* a little thickened upwards. *Flowers* rather large, yellow. *Achenes* of all the florets beaked.

3. *L. maculata* L. (*spotted C.*); stem almost leafless solitary nearly glabrous, leaves obovate-oblong undivided toothed (spotted above), involucre slightly hispid. *E. B.* t. 225.

In open chalky and limestone pastures, rare. Suffolk; Cambridgeshire. Ormeshead, N. Wales. 2. 7, 8. — *Leaves* almost all radical, scabrous. *Stem or scape* with one, or rarely 2—5, large deep yellow *flowers* and 2 or 3 small lanceolate *scales* or *bracteas*.

\*\* *Pappus pilose filiform.* (Gen. 7—12.)

## 7. LACTUCA Linn. Lettuce.

*Achenes* much compressed, with a long beak. *Pappus pilose*. *Receptacle* naked. *Involucre* imbricated, cylindrical, few-flowered, its scales with a membranous margin. — Named from *luc*, milk, which flows from this and many plants of the tribe, when broken.

\* *Beak of achenes elongated (white).* *Keel of leaves prickly.*

1. *L. virgata* L. (*strong-scented L.*); leaves patent oblong toothed or sinuated two-eared and amplexicaul at the base, flowers paniced, beak as long as the (black) achene. *E. B.* t. 1957.

Banks and way-sides, especially in a chalky soil. Rare in Scotland; about Edinb., Dunkeld, Coldstream. Melrose and Stirling Castle. ♂. 4—8. — *Stems* 3—4 feet high, erect, prickly, with distant *leaves*. *Root-leaves* obovate, numerous. — The plant abounds with a milky and narcotic juice, which is considered by some practitioners as a gentle and safe opiate. *Flowers* small yellow.

2. *L. Scariola* L. (*prickly L.*); leaves nearly upright lanceolate-sagittate sinuate and ciliate-dentate, panicle leafy, beak as long as the (pale) achene. *E. B.* t. 268.

Waste ground, rare. Cambridgeshire; Southend, Essex; Sussex and the southern counties. 2. 7, 8. — Of milder quality and paler colour than the last, with more upright *branches* and *leaves* and pale *achenes*. The *Garden Lettuce* is *L. sativa* L., not a native.

3. *L. saligna* L. (*least L.*); root-leaves lanceolate with few teeth, lower cauline ones pinnatifid, upper ones linear-lanceolate entire sagittate, flowers lateral with small floral leaves, beak thrice as long as the fruit. *E. B.* t. 707.

Chalky waste ground and salt-marshes, in the south-east of England. ♂. 7, 8. — Whole *plant* slender; *branches* twiggy; the small *flowers* may be said to be almost spicate.

\*\* *Beak short.* *Keel of leaves smooth.*

4. *L. muralis* Less. (*Ivy-leaved L.*); florets 5, leaves lyrate-pinnatifid and toothed the terminal lobe angled, panicle with

divaricated branches, beak much shorter than the (black) achene. *Prenanthes* *L.*: *E. B.* t. 457.

On old walls and in woods.  $\varphi$  or  $\sigma$ . 6—8. — *Stem* 2 ft. high, panicled above. *Flowers* small yellow.

8. *MULGÉDIUM* *Cass.* Blue Sow-thistle.

*Achenes* much compressed, constricted above the seed and terminated by a slightly dilated disk. *Pappus* brittle. *Recept.* naked. *Invol.* many-flowered, double: inner of one row of equal scales; outer of imbricated short lax ones. — Named from *mulgeo*, to milk, on account of the milky juice.

1. *M. alpinum* *Less.* (*alpine B.*); flower-stalks bracteas and involucre glandulose-hispid racemose, stems glabrous below, leaves glabrous lyrate arrow-shaped at the base, terminal lobe very large deltoideo-hastate. *Sonchus cæruleus*. *E. B.* t. 2425.

Rocky places, near rivulets. Loch-na-gar and Clova mountains and in their vicinity.  $\varphi$ . 7, 8. — *Flowers* blue.

9. *SÓNCHUS* *Lim.* Sow-thistle.

*Achenes* much compressed, without a beak. *Pappus* pilose. *Recept.* naked. *Invol.* imbricated, with 2—3 rows of unequal at length connivent scales, tumid at the base, few-flowered. — Named *σόνχος*, in Greek, from *σῶφος*, *hollow*, in allusion to the hollow stems.

\* *Root perennial.*

1. *S. palustris* *L.* (*tall Marsh S.*); heads corymbose, peduncles and involucre glandulose-hispid, leaves clasping the stem with long acute sagittate auricles, lower ones runcinate-pinnatifid with few segments, upper ones entire, stem simple, root without scions. *E. B.* t. 935.

Marshy places, rare. Isle of Ely; Greenwich; Blackwall; Croydon; Wouldham, Kent.  $\varphi$ . 7, 8. — *Stem* 6—8 ft. high. *Flowers* large yellow.

2. *S. arvensis* *L.* (*Corn S.*); heads corymbose, peduncles and involucre glandulose-hispid, leaves denticulate clasping the stem with short obtuse auricles, lower ones sinuate-runcinate, upper ones oblong-lanceolate entire, stem simple, root with creeping scions. *E. B.* t. 674.

Corn-fields, frequent.  $\varphi$ . 8, 9. — *Stems* 3—4 ft. high. *Flowers* very large yellow.

\*\* *Root annual.*

3. *S. oleráceus* *L.* (*common annual S.*); heads subumbellate, involucre glabrous, leaves undivided or pinnatifid toothed, lower ones stalked, upper ones lanceolate clasping the stem with

spreading sagittate auricles, fruit longitudinally ribbed and transversely rugose. — *α*. leaves divided. *E. B.* t. 843. — *β*. leaves entire.

Waste places and cultivated ground, common. ☉. 6—8. — *Stem* 2—3 ft. high. *Flowers* small, yellow. *Involucre* conical when in seed.

4. *S. ásper* Hoffm. (*sharp-fringed annual S.*); heads subumbellate, involucre glabrous, leaves undivided or pinnatifid sharply toothed all lanceolate clasping the stem with rounded auricles, stem branched, fruit longitudinally ribbed without transverse wrinkles. — *α*. leaves undivided. *E. B. S.* t. 2765. — *β*. leaves divided. *E. B. S.* t. 2766.

Waste places and cultivated ground, common. ☉. 6—8. — Quite similar to the last in general appearance, of which it is therefore perhaps a mere variety.

#### 10. *CRÉPIS* Linn. Hawk's-beard.

*Achenes* terete or angled, narrowed upwards or obscurely beaked, striated. *Pappus* pilose, copious, soft, mostly white, deciduous. *Recept.* naked. *Invol.* scaly at the base. — Name: given by Pliny to some plant, from *κρηπίς*, a *sandal*, which the leaves were supposed to resemble.

1. *C. virens* L. (*smooth H.*); leaves glabrous runcinate or pinnatifid, the upper ones linear sagittate amplexicaul, the margins plane remotely toothed, stem glabrous, panicle subcorymbose, outer involucreal scales appressed linear, inner ones glabrous within, fruit oblong slightly attenuated upwards with smooth ribs shorter than the pappus. *C. tectorum* *E. B.* t. 1111.

Dry pastures, roofs of cottages, &c. ☉. 6—9. — *Stems* 1—3 ft. high. *Radical leaves* more or less pinnatifid or runcinate, their teeth or segments often horizontal, sometimes curved upwards. *Flowers* small, yellow. *Pappus* about as long as the *involucre*, which is at length ovate and ribbed.

2. *C. biennis* L. (*rough H.*); leaves rough runcinate-pinnatifid, uppermost lanceolate amplexicaul dentato-pinnatifid, panicle subcorymbose, involucre downy, outer scales oblong-linear lax, inner ones downy within, fruit oblong with smooth ribs longer than the pappus. *E. B. S.* t. 2929. fig. *b*.

Chalky pastures in England, rare. Littlebury, near Saffron-Walden, Essex; Madanscourt-hill, Kent; Twycross, Leicestershire; and Cambridgeshire. ♂. 6, 7. — *Stems* 2—4 ft. high, furrowed, rough above. *Flowers* much larger than in the preceding. *Involucre* about as long as the *pappus*, outer *scales* almost glabrous. *Pappus* very white, and upon a *fruit* so attenuated upwards as to form a stalk.

3. *C. \*púlchra* L. (*small-flowered H.*); leaves downy toothed, radical ones oblong-obovate, the rest sagittato-amplexicaul,

panicle corymbose spreading, achenes very obscurely striated about as long as the pappus, involucre glabrous, outer scales ovate minute appressed. *L.: E. B. t.* 2325.

"Among the debris of the rocks on the hills of Turin and Pitsandy," near Forfar, Scotland; "but very rare."—*G. Don.* (Not now found there.) ☉. 6—9.—*Root-leaves* tapering into a foot-stalk; *cauline* ones broad, clasping the stem with their toothed bases. The very few specimens from Don, which we have seen, are more luxuriant than Smith's acknowledged cultivated one, from which the figure in *E. Bot.* was made.

4. *C. succisæfolia* Tausch (*Succory-leaved H.*); leaves oblong-obtuse nearly quite entire the lower ones attenuated into a petiole, upper ones sessile and somewhat amplexicaul, stem tall paniced upwards, peduncles and involucre glandular hairy, the scales lanceolate attenuated outer ones very short appressed, achenes much striated compressed slightly narrower upwards as long as the pappus which latter is rather shorter than the involucre. *Hieracium molle Jacq.: E. B. t.* 2210.

Woods; Scotland. Near Forfar, Falls of the Tummel, Glen Luss, also in Langton woods, and near Renton, Berwickshire. 4. 7, 8.—This plant varies much in the hairiness of its leaves.

5. *C. palulosa* Mœnch (*Marsh H.*); glabrous, radical leaves ovate-oblong runcinate-dentate attenuated into a foot-stalk, cauline ones lanceolate much acuminate heart-shaped and amplexicaul at the base, stem erect branched upwards and subcorymbose, involucre glandular hairy, achenes striated scarcely narrower upwards about as long as the pappus. *Hieracium L.: E. B. t.* 1094.

Frequent in moist woods and rocky places. 4. 7—9.—*Stem-leaves* usually toothed, sometimes entire. *Pappus* in a single row, and more rigid and brittle than in any others of the genus.

# 11. BORKHAUSIA Mœnch. Borkhausia.

*Achenes* terete, transversely wrinkled, with a long subulate beak. *Pappus* pilose. *Recept.* naked. *Invol.* oval, with deciduous subulate scales, at length ribbed and furrowed.—Named in honour of *Moritz Borkhausen*, a German Botanist.

1. *B. fetida* DC. (*stinking B.*); leaves hairy, lower cauline ones sessile runcinato-pinnatifid, unexpanded heads drooping, involucre hairy and downy, its outer scales lanceolate acute, achenes of the margin slightly beaked and scarcely so long as the involucre, the central ones long-beaked with the pappus entirely protruded. *Crepis L.: E. B. t.* 406.

Dry chalky ground, rare. Suffolk, Cambridge, Norfolk, and Kent. ♂. 6, 7.—*Stem* spreading, its upper leaves lanceolate, cut at the base. *Heads* solitary, on long simple stalks. *Corollas* red

externally. The herb is very milky, and said to diffuse a smell resembling bitter almonds.

2. *B. taraxacifolia* DC. (*smaller rough B.*); leaves scabrous, lower cauline ones runcinato-pinnatifid sessile, heads erect, involucre bristly and downy longer than the uniformly beaked achenes, outer scales ovato-lanceolate membranaceous margined, bracteas herbaceous linear. *Crepis E. B. S. t. 2929. C. biennis E. B. t. 149.*

Chalky pastures in England: Kent, Suffolk, Essex, Surrey. Caernarvonshire, N. Wales. ♂. 6, 7. — *Leaves* mostly radical, stalked, lyrate-runcinate or pinnatifid, with the terminal lobes large: upper cauline ones linear-lanceolate with linear lobes near the base. *Heads* in an irregular corymb. *Achenes* with rough ribs, and all of them with a beak nearly their own length.

## 12. LEÓNTODON Linn. Dandelion. (Tab. III. A.)

*Achenes* terete, with a very long slender beak. *Pappus* pilose. *Recept.* naked. *Invol.* imbricated with scales, of which the outermost are frequently lax and flaccid. — Named from *λεων*, a lion, and *οδους*, a tooth, from the tooth-like margins of the leaves.

1. *L. Taraxacum* L. (*common D.*); leaves runcinated toothed. — *α.* outer scales of the involucre reflexed. *E. B. t. 510.* *Taraxacum officinale* Wigg. *T. Dens Leonis* Desf. — *β.* scales of the involucre erect appressed. *L. palustre* Sm. *E. B. t. 553.* *Tar. palustre* DC.

Meadows and pastures, common. — *β.* Wet open pastures and moors. 4. 3–10. — We only notice the two extreme vars., but there are several intermediate ones. The lowermost *leaves* are sometimes obovate, and not runcinate. *Fruit* linear-obovate, obtuse, muricated towards or at the apex, longitudinally striated, usually pale, but sometimes reddish-yellow or even bright red.

## 13. HIERÁCIUM Linn. Hawk-weed.<sup>1</sup>

*Achenes* angular, furrowed, with an entire or toothed margin at the top without a beak. *Pappus* pilose, in one row, frequently

<sup>1</sup> The latest work on this genus is that of Fries, *Symb. ad Hist. Hier.* (Nov. Act. Reg. Soc. Scient. Vol. Ups. xiii. xiv.); in it he notices (either by referring to plates or specimens) no fewer than 32 species natives of Britain: many of these we cannot identify by his characters, and have omitted them, as we have not access to authentic specimens; but indeed if we rightly understand the passage "*Plurimi fingunt, se primo obtutu ex facie vel, quod pejus, e characteribus posse dijudicare quid species, quid varietas. At characteres nullo modo sunt specierum criteria, tantum ad species discernendas adminicula.*" it would appear that neither characters nor specimens are to be trusted to in this genus. We shall not attempt to arrange our species in the order proposed by Fries, as we cannot retain entire either his principal groups or subdivisions, not being able to satisfy ourselves of the validity of the characters proposed. Thus Fries separates our second group into two, as distinct, in his opinion, from each other, as either is from our first or third; while the only cha-

brownish, persistent and brittle. *Receptacle* nearly naked, dotted. *Invol.* imbricated. — Name: *ἱερακίον*, name of a plant; so called from *ἱεραξ*, a hawk; because birds of prey were imagined to employ this plant to strengthen their powers of vision.

1. *Plants producing scions. Ligules glabrous at the apex. Achenes minute, striated: hairs of the pappus equal, very slender.*

1. *H. Pilosella* L. (common Mouse-ear *H.*); leaves entire elliptic-lanceolate or lanceolate hairy with dense stellate down beneath, primary stem 1-headed leafless, involucre ovate at the base, inner scales acute and narrower than the outer ones. *E. B. t.* 1093.

Banks and dry pastures, frequent. 4. 5—8.—*Florets* of a pale lemon-yellow, those of the ray with red stripes on the back. The leafy scions sometimes produce a flowering terminal stem in the plants of this section; and we must carefully distinguish such from the primary or true stem.

(We omit here *H. dubium* Huds. not Linn. as it is now quite uncertain what plant was intended; the description given by Woodward in With. Bot. Arr., and the fig. in *E. B. t.* 2332, both of garden specimens, belonging to *H. stoloniferum* W. and K., while Smith's description in the Engl. Fl. is taken from *H. Auricula* L. We also omit *H. Auricula* L. said to have been found in Westmoreland, the description and figure, *E. B. t.* 2368, given by Smith, being taken from a Swiss specimen of *H. glaciale* Lach. To add to our uncertainty about the supposed British species, the fig. in Fl. Dan. t. 1014, quoted by Woodward for Hudson's *H. dubium*, and by Smith for his *H. Auricula*, belongs to *H. collinum* Fries, while Fl. Dan. t. 1111, referred by Smith to his *H. dubium*, is the true *H. Auricula*, as quoted by Withering.)

2. *H. \*aurantiacum* L. (Orange *H.*); leaves entire obovato-lanceolate green with longish hairs and no stellate down on both sides, scape leafy near the base hairy bearing a corymb of many flowers, involucre blackish and hispid with black hairs, inner scales broadest obtuse. *E. B. t.* 1469.

Hilly woods in various parts of England and Scotland, but an outcast from cottage gardens, where it is common. 4. 6, 7.—

acters given are that, in the one the involucre is regularly imbricated in several rows, the outer scales passing gradually into the inner; while in the remainder it is interruptedly imbricated, the outer scales being much shorter and not passing gradually into the inner by an intermediate series: now, in this respect we see no difference between *H. Iricum* and *H. pallidum*, or between *H. nigrescens* and *H. alpinum*. Fries places great dependence on the colour of the style, that being either permanently yellow, or covered, when old and dried, with short dark hairs: in the former case he states the style to be glabrous, a structure we have not observed in any *Cichoraceus* genus. The ligules being ciliated (furnished with a few hairs), or glabrous at the apex, is usually of consequence; but this character must be looked for in the unexpanded florets.—As in the genera *Rosa* and *Rubus*, we shall for brevity call the rigid hairs bearing glands, by the name of *setæ*; but these setæ pass gradually into black hairs tipped with a white hair instead of a gland, and these again into ordinary hairs either with or without a bulbous black base; so that characters obtained from them cannot be of great value.



Hairs long upon the upper part of the *scape*; black at the base, as they are upon the involucre, mixed with black setæ; hence often called *Grim-the-Collier*. *Flowers* deep orange. *Style* dark brown.

2. *Plants producing (in autumn) a tuft of spreading leaves about the root. Achenes large. Hairs of the pappus unequal.*

3. II. \* *villosum* L. (*shaggy H.*); leaves glaucous without glands shaggy with long soft flexuose hairs, upper ones ovate somewhat amplexicaul, involucre much imbricated villous pale, all the scales elongated and acuminate, the outer ones sub-foliaceous lax, ligule glabrous at the back and apex.

Near Loch Callater, north of Clova, and Loch-na-Gar, Scotland. 24. 7, 8.—The last station is mentioned upon the authority of a specimen in the York museum, but by whom collected is unknown to us; for the first Mr. T. Drummond is quoted as the authority. We ourselves have a specimen from Mr. Drummond marked from Clova, but which has quite the aspect of a cultivated one, and was probably obtained from Don's, afterwards Drummond's garden at Forfar, where it was supposed to be the plant of *E. B. t.* 2379, which however it is not. It has been seen in our mountains by no living Botanist, and we do not believe that it is a British species. Fries, on the authority of a specimen from Dickson in Thunberg's herbarium, considers *H. villosum* Dicks. in Linn. Soc. Trans. ii. p. 288, to be *H. Sudeticum* Sternb., a species agreeing with *H. alpinum* in the green glandular leaves, but differing in the cauline ones, having an ovate base. We suspect however that the Ben Nevis plant intended by Dickson was *H. pallidum*.

4. II. *alpinum* L. (*alpine H.*); green, stem with one or few heads and one or more leaves hairy, leaves hairy usually with glands, radical and lower cauline ones (if large) stalked, upper or small ones sessile, heads in bud drooping, involucre campanulate much but loosely imbricated clothed with long gray silky hairs, its scales mostly spreading innermost ones acuminate, ligules hairy beneath. *E. B. t.* 1110.

Elevated rocky mountains, in Scotland and Wales. 24. 7, 8.—*Stem* from 4 inches to more than 1 ft. high, simple or branched, sometimes naked, sometimes with a single leaf, and occasionally with several leaves. *Leaves* varying from elliptical and about 2 inches long, to oblong-lanceolate, and sometimes linear-spathulate, when including the petiole they are 6—8 inches long; usually nearly entire, but sometimes deeply toothed or even lacinated. *Hairs* on the upper part of the *scape* black at the base and often mixed with black setæ. In the common form the involucre is thickly and the stem thinly clothed with dingy coloured or fulvous long silky hairs.

5. II. *nigræscens* Willd. (*black-headed H.*); green, stem 1- or few-headed with 1—3 leaves remote from the base, leaves ovate or lanceolate hairy, radical ones ovate obovate or lanceolate toothed tapering into the foot-stalk, scales of the involucre

appressed covered with numerous black hairs or setæ often mixed with longer whitish hairs from a black base, inner ones acuminate "in bud straight and much longer than the florets," ligules hairy beneath or only ciliated at the apex. *H. pulmonarium* Sm.: *E. B. t.* 2307. (cult.)

Clova and Aberdeenshire mountains. Striden-edge, Helvellyn, Westmoreland. 4. 7, 8. — We are by no means satisfied that this is really distinct from the last, indeed the more hairy forms with also a hairy ligule approach so closely to the less hairy states of *H. alpinum*, that we know of no character to distinguish them in the dried specimen except the black involucre, an appearance caused by more of the black hairs having glands and fewer of them white extremities. It is probable that we unite here not only the dark headed state of *H. alpinum* noticed by Fries, but also his *H. nigrescens* and *H. atratum* (the last is the Striden-edge plant), which two are supposed to have so different an involucre that he removes them to a great distance from *H. alpinum*. We cannot judge from our dried specimens whether the unexpanded heads be erect or drooping; the leaves, though usually much less glandular than those of *H. alpinum*, are never entirely destitute of glands. Mr. Backhouse remarks that the Westmoreland plant has ureolate involucre; we have no corresponding observations on the Scotch one made in the living specimen; in the dried one we see no difference. Fries refers *H. pulmonarium* Sm. to *H. alpinum*, and says he has seen no specimen of the true *H. nigrescens* from this country.

6. *H. pallidum* Biv. (*pale H.*); stem scape-like with one or few leaves simple or forked, leaves somewhat glaucous beneath, radical ones ovate elliptical or lanceolate tapering into a foot-stalk toothed, teeth pointing forward, involucre ovate at the base with scattered stellate down mixed with white hairs and blackish setæ, "inner scales cuspidate in bud straight and much longer than the florets," ligules ciliated at the apex and sometimes hairy beneath. *Biv. Plant. ined.* p. 11. *H. Halleri* Hook. in *Fl. Lond.* t. 215. *H. Lawsoni* Bab. *H. villosum* *E. B. t.* 2379. (cult.) *H. Anglicum* Fr. *H. Sternbergii* Fræh. in DC. Prod.

Scottish mountains, principally of Breadalbane, Clova, and Aberdeenshire. Teesdale. 4. 7, 8. — This has the stem usually simple and with one head, or simply forked, but there are much more luxuriant forms with the branches again forked, while the habit approaches *H. sylvaticum*. Leaves of a thin texture, especially when dried, sometimes minutely, sometimes very coarsely toothed; upper surface rather green than glaucous, beneath sometimes furnished with scattered stellate down, but often scarcely any; hence we do not see how *H. Anglicum* differs. *Style* not permanently yellow, as Fries says, but dark and hispid when dry. The heads are, we believe, erect before expansion, not drooping as in *H. alpinum*; but notwithstanding that peculiarity, and the paler colour of the under side of the foliage, we fear it cannot be at all times distinguished from that species. *H.*

*divaricatum*, G. Don, from Clova, may be the same; but our specimen is not good. *H. glaucum* of T. Drummond (*H. murorum*  $\delta$ . *glabrum* of the last edition of this Flora) is a very marked plant, approaching in appearance to the true *H. glaucum*, but perhaps nearer the present species; its leaves are narrower; it has been only observed in the ravine formed by the White Water at the head of Glen Dole, Clova, and is there very rare: it requires to be re-examined. — Fries enumerates as British *H. oreoides* (Dillen. Hort. Elth. t. 149. f. 179.), and *H. saxifragum*; but we have seen nothing corresponding with the characters given by him.

7. *H. murorum* L. (*Wall H.*); stem with about one leaf corymbose or forked, radical leaves numerous persistent stalked usually rounded or cordate at the base and there with radiating or reflexed teeth somewhat hairy, cauline ones sessile or stalked, peduncles and the involucre with white stellate down and usually black hairs or setæ, "inner scales of the involucre cuspidate in bud straight and much longer than the florets," ligules glabrous at the apex. *E. B.* t. 2082.

Woods, walls, and rocks, not uncommon. 4. 6—8. — Fries refers Smith's *var.  $\beta$* . only to this species, while the *var.  $\alpha$* . and the figure in *E. Bot.* is considered to be *H. casium* (under which he quotes *H. Hypochaeridis* of some English collectors), a species according to him with the involucral scales of *H. sylvaticum*, but with the stem forked 1-leaved and the leaves furnished beneath with stellate down: the English specimens however which we have seen appear to be a few-flowered state of *H. murorum*. Fries also mentions his *H. plumbeum* as a British species, a plant having the leaves with stellate down beneath, and the involucre of *H. murorum*, the stem being forked as in *H. casium*. We fear, however, that the character derived from the stellate down depends on the aridity of the soil, and Fries himself allows that the inflorescence of the true *H. murorum* is sometimes forked. What we have seen in herbaria under the name of *H. diaphanum*  $\alpha$ . Bab. (*H. Schmidtii* Bab. Man. ed. 2.) belongs, we think, partly to the present and partly to the next species: indeed we do not know how to distinguish some specimens of *H. sylvaticum* which have few or no leaves on the stem, from *H. murorum*, unless the character derived by Fries from the position of the scales of the involucre in æstivation, prove constant; but it cannot however be seen after the specimen has been pressed and dried. Fries states that the alpine forms of this species have the ligules ciliated; such we have not observed in this country.

8. *H. sylvaticum* Sm. (*Wood H.*); stem usually with several leaves branched upwards and sub-corymbose or forked, slightly hairy, leaves ovate-lanceolate toothed with the teeth pointing upwards somewhat hairy, radical ones stalked usually tapering into the petiole, cauline ones stalked or sessile, peduncles at the apex and the involucre with more or less stellate down mixed sometimes with black hairs or setæ, "inner scales bluntish in

bud incumbent upon and not longer than the florets," ligules glabrous at the apex. *H. vulgatum* Fr.— $\alpha$ . leaves uniformly green or purplish or glaucous underneath, radical ones persistent till the period of flowering. *E. B. t.* 2031.— $\beta$ . leaves spotted with dark purple, radical ones withering before the expansion of the flowers. *H. maculatum* Sm.: *E. B. t.* 2121.

Mountain-woods, walls, and banks, frequent. —  $\beta$ . more rare. 4. 7, 8. — The cauline leaves are usually numerous and coarsely toothed, never amplexicaul, but stalked or attenuated at the base: in some specimens collected by the late G. Don on the Hill of Forgan, and preserved in the late Mr. Brodie's herbarium (now belonging to D. Steuart, Esq.), there are either no cauline leaves or they are few and small.

9. *H. Góthicum* Fr. (*naked-headed H.*); "obscurely green, stem rigid leafy somewhat corymbose or with erect branches at the apex, leaves ovate or lanceolate coarsely toothed in the middle, radical ones shortly stalked, cauline ones sessile passing gradually into bracteas, involucre dark green without stellate down blackish when dry, scales glandular on the keel spirally imbricated broad mostly obtuse glabrous at the apex, pappus reddish." *Fr. Symb.* p. 121.

England. *Mr. Woods.* 4. 7, 8. — *Leaves* all similar in form; radical ones sometimes persistent, but often withering away long before the flowers expand; cauline ones sessile, uppermost scarcely amplexicaul. Scales of the involucre patulous and somewhat squarrose, of a uniform dark green, the margins not paler, innermost acuminate. Ligules glabrous at the apex. The style becomes darkish brown by drying. With this species we are not acquainted. Fries referred it formerly to *H. boreale*, but he has since removed it near to *H. sylvaticum* (his *H. vulgatum*).

10. *H. cerinthoides* L. (*Honey-wort H.*); glaucous, stem with few leaves corymbose at the apex hairy, leaves hairy, radical ones oblong or oblong-lanceolate toothed in the middle attenuated into a broad stalk, cauline ones more or less amplexicaul ovate acuminate, the upper part of the peduncles stellate-downy with hairs from a black base and setæ, involucre ventricose becoming blackish by drying clothed with black hairs mixed with whitish ones from a black base, scales acuminate, ligules ciliated at the apex. *E. B. t.* 2378. *H. Lawsoni* Sm. (not Vill.): *E. B. t.* 2083. *H. Lapeyrousii* Bab.: *E. B. S. t.* 2915. *H. Iricum* Fries l. c. p. 60.

Upon rocks by the rivulet between Shap and Anna Well, Westmoreland; *Lawson.* Teesdale, Durham; *Babington.* Along torrents on Ben Coona, and Ben Rea, Cunnemara; *Shuttleworth.* Garra Head, Antrim; *D. Moore.* "Rocks in the Highlands of Scotland, not uncommon;" *G. Don.* 4. 8. — Although Don gave a general Scotch station for this plant, he afterwards only mentioned

in Headrick's Agr. of Angusshire "rocks at the head of Clova," and in Brodie's herbarium, which he usually supplied liberally, not a specimen is to be found approaching to it, except one "supposed to be a var. of *H. cerinthoides*" from Forgan Hill, and this has the stem woolly at the base as in the closely allied *H. phlomoides*. It is however doubtful if Don knew the species well; for one specimen (in herb. Hook.) from Mr. D. Don, marked *H. cerinthoides*, proves to be *H. valdepilosum* Fr. (and certainly was not obtained from Scotland), while another named *H. Lawsoni* without any precise locality agrees well with the true plant. In some Irish specimens the radical leaves are only slightly denticulate, in others they are coarsely toothed; in all Irish and English specimens we have seen, the cauline ones are usually conspicuously toothed. In the Linnæan plant, all the leaves are only slightly denticulate: we do not, however, perceive any other difference, and Fries mentions having *H. cerinthoides* as well as *H. Iricum* from Ireland. With regard to *H. Lawsoni*, Smith seems latterly to have had chiefly *H. pallidum* in view, but the figure in *E. Bot.* has amplexicaul leaves, and the present is the only species in the north of England, known to us, with which it can be compared: on the other hand, Fries considers that figure to represent *H. trichocepalum*; and we ought to mention that we have a specimen of that species from Don and Drummond's garden at Forfar, under the name of *H. cerinthoides*, and have seen another, without a name, in Brodie's herb. from G. Don, said to have been found "near the village called Craichie, 3 m. from Forfar," which we can scarcely believe. As a species the present one is somewhat allied to *H. pallidum*, from which it differs by the cauline leaves usually more numerous and the upper ones amplexicaul. *Heads* large, almost globose.

11. *H. \*amplexicaule* L. (*amplexicaul H.*); deep green, all covered with yellowish glandular hairs and viscid, stem woolly at the base 1—3-leaved branched, branches patent, leaves somewhat rigid, radical ones oblong-ovate toothed stalked, cauline ones semi-amplexicaul, those of the branches and bractæas cordate-ovate amplexicaul, ligules ciliated at the apex. *E. B. S.* t. 2690.

"On a rock called the Garrie Barns, in Clova." *G. Don.* 21. 7, 8. — We omit the station of Cliesh Castle, Kinross-shire, not only because it is now extinct, but because we have been informed that this and other rarities observed there, are understood to have been brought from Holland with the soil for the old garden at the castle, on the wall of which they were found: for the same reason we omit the wall of the Oxford Botanic Garden. We fear the Clova station is even more objectionable, the specimen in our herbarium, labelled by Don himself, as found on the above rock, being too obviously a cultivated one.

12. *H. Dofrine* Fr. (*Dofrine H.*); "pale green, stem simple leafy divided upwards into few short 1- (or rarely 2-) headed peduncles, leaves oblong or lanceolate toothed, radical ones smaller than the others stalked soon withering, cauline ones

sessile, upper with a cordate base and semi-amplexicaul, involucre becoming black hairy, scales broad obtuse, ligules ciliated." *Fr. l. c.*

Scotland (*Fries*). 4. 7, 8. — *Fries* states neither from whom he received this, nor in what part it was found; and we have seen no British specimens: from the radical leaves soon withering, it might be supposed to belong to the next group, and it has the involucre of some distant-leaved forms of *H. boreale*, but the ligules are constantly ciliated. *Leaves* passing gradually into bracteas. *Involucre* subglobose, pretty large, black, with a few short simple or rarely glandular hairs. *Achenes*, as in *H. boreale*, dark brown, slightly scabrous: *pappus* white.

3. *Plants producing (before winter) leaf-buds at the base, which next year become leafy stems without radical leaves. Achenes of moderate size, truncated upwards: hairs of pappus unequal.*

13. *II. prenanthoides* Vill. (*rough-bordered II.*); stem erect leafy simple hairy, panicle corymbose, leaves denticulate or entire ciliated reticulated and glaucous beneath, lower ones oblong tapering at the base into an auricled amplexicaul petiole, upper gradually smaller amplexicaul ovate-cordate acute or acuminate, peduncles and involucre hispid with hairs and black setæ, outer scales few and much smaller than the inner ones, ligules ciliated at the apex, achenes pale or light brown very smooth. *E. B.* t. 2235. *H. denticulatum* Sm.: *E. B.* t. 2122.

River-sides in the Highlands of Scotland, but rare. 4. 7, 8. — *Heads* small, numerous; *involucre*s cylindrical, the scales placed somewhat in two rows, the lower considerably shorter than the upper, without an intermediate one. *Leaves* gradually passing into bracteas, as in all this group. *Fries* refers the fig. of *E. Bot.* to the next. *II. denticulatum* Sm. has now been satisfactorily ascertained to be a mere form of *II. prenanthoides*; but what is usually so called belongs to the proteus-like *H. boreale* or *H. rigidum*.

14. *II. strictum* Fr. (*straight-branched H.*); "stem hollow rigid leafy with straight leafless branches from the axils of the leaves, leaves oblong-lanceolate denticulate narrowed at the base and sub-amplexicaul glaucous beneath, peduncles clothed with stellate down, involucre blackish slightly glandular hairy, innermost scales obtuse, ligules ciliated, achenes blackish-brown" slightly scabrous. *Fr. l. c.* p. 164. *H. denticulatum* Bab.?

Scotland, in mountain-glens. Ochills and Braidalbane mountains; Kincardineshire. 4. 7, 8. — We do not quite understand this species: the Scotch specimens examined by *Fries* were collected by Dr. Dewar, and sent to *Fries* under the name of *H. rigidum* and *H. inuloides*: we have examined all Dr. Dewar's, and also the corresponding specimens in the herb. of the Bot. Soc. of Edinburgh, and have after a careful scrutiny detected a few with the ligules ciliated, but which other-

wise were precisely similar to forms of *H. boreale*. In what we refer hither, the upper leaves are sessile with a rounded base, oblong or sometimes shortly ovate. Peduncles frequently with a few short black hairs or setæ mixed with the down. Involucres with more copious black hairs and setæ than could be inferred from the specific character, scales appressed regularly imbricated, the margins with white down, particularly in bud.

15. *H. boreale* Fr. (*shrubby broad-leaved H.*); stem erect leafy rough or hairy, branches sub-corymbose ovate-lanceolate or lanceolate toothed the lower ones tapering into a petiole, upper ones sub-sessile with an ovate rounded or cordate base, involucres blackish, scales appressed, ligules glabrous at the apex, achenes (blackish-brown or red) slightly scabrous. *H. Sabaudum* E. B. t. 349. *H. inuloides* Bab.?

Woods and hedges, not uncommon. 2. 7—9.—We fear that this is a much more variable plant than is generally supposed: the typical state is to have the scales of the involucre of an uniform blackish-green colour, perfectly free of black setæ although sometimes slightly hispid in the keel and with scattered longish white hairs, the whole contrasting with the white stellate down on the peduncles; but specimens occur when the involucre is of a gray colour, the margins of the scales being pale. The leaves are usually close to each other, but specimens occur when they are distant and few; when with an ovate base, they show a transition to the next species, which is probably not distinct. All the British specimens we have seen of *H. inuloides* belong to the latter form with larger flowers than usual, some have permanently yellow styles, when they may be *H. crocatum* Fr. (to which Fries refers *H. inuloides* Bab.); others have them dark and livid after drying.

16. *H. rigidum* Hartm. (*rigid-stemmed H.*); green, stem erect rigid solid leafy, branches sub-corymbose, leaves lanceolate or linear attenuated at the base all nearly similar in shape few-toothed in the middle, lower ones stalked, upper nearly sessile, involucreal scales appressed usually blackish, "inner ones in bud incumbent over the florets," achenes blackish-brown slightly scabrous. *Fr. l. c.* p. 173.

Mountainous districts, perhaps not unfrequent. 2. 7, 8.—This is we fear only a var. of the last, with all the leaves attenuated at the base. The very few authentic specimens we have seen are hairy with the scales of the involucre broad and of an almost uniform dark-green.

17. *H. tridentatum* Fr. (*straight-scaled shrubby H.*); "stem mostly hollow leafy straight, lower leaves oblong stalked, the rest lanceolate sessile few-toothed in the middle, inflorescence corymbose nearly leafless erect, peduncles elongated filiform and as well as the involucres with stellate down and short hairs, involucres after flowering constricted in the middle, scales acute pale on the margin straight and longer than the unexpanded florets." *Fr. l. c.* p. 171.

Walls, banks, and woods. *Ų.* 6—8. — With this we are not well acquainted: perhaps some specimens which we can scarcely refer to the last, having narrow pale-edged scales to the involucre, ought to be placed here; but the stem is solid, except near the top. The two species seem only to differ essentially by having the involucre of the present constricted in the middle after flowering, and before expansion the inner scales are not incumbent over the florets, characters which cannot be observed in the specimens that have been pressed. Mr. Babington's specimens of both this and the last have, we presume, been examined and verified by Fries; but his characters differ considerably from that author's. In fact, according to Mr. B.'s Manual, the two seem scarcely to differ except by the present one having a scabrous and *H. rigidum* a glabrous stem: according to Fries it varies in *H. tridentatum* from glabrous to hairy, in *H. rigidum* from scabrous to hairy. The *achenes* appear quite the same in both.

18. *H. umbellatum* L. (*narrow-leaved H.*); stem erect simple corymbose or subumbellate at the apex rigid very leafy, leaves oblong-lanceolate or linear toothed or entire, lower ones attenuated at the base, upper sessile acute or rounded at the base, peduncles and sometimes the involucre with stellate down not hairy, scales obtuse with recurved points. — *α.* leaves all attenuated at the base. *E. B. t.* 1771. — *β.* leaves broader and ovate at the base, whole plant larger.

Woods, or stony, or rocky places. Rare in Scotland. — *β.* Near Dunkerran, Co. Kerry, Ireland. *Ų.* 8, 9. — The most decidedly marked species of the genus. *Involucre*s usually dark green and glabrous, but sometimes pale, always with recurved points to the scales. *Achenes* slightly scabrous, dark brown, and usually shorter than those of *H. boreale*. *Styles* said by Fries to be permanently yellow, and they never seem to become of the dark livid colour observable in some others.<sup>1</sup>

\*\*\* *Pappus* neither *filiform* nor *plumose*. (Gen. 14, 15.)

#### 14. *LÁPSANA* Linn.. Nipple-wort.

*Achene* compressed, striated. *Pappus* none, or a mere border. *Receptacle* naked. *Involucre* in a single row of erect scales, with small ones at the base. — Named from *λαπαζω*, to *purge*, from its laxative qualities.

<sup>1</sup> In the above not very satisfactory account of the British species of this troublesome genus, we have omitted many forms which have been sent to us for examination, but which, being isolated specimens, required to be studied in the living state. Although we have not admitted so many species as Fries, we believe that we have still too many, and that nearly all those truly indigenous to this country might be referred to *H. prenanthoides*, *H. boreale*, *H. umbellatum*, *H. pilosella*, *H. sylvaticum*, *H. cerinthoides*, and *H. alpinum*, between the typical forms of which three last, however, there seems to be an unbroken series of links. We understand that Mr. Babington has undertaken to give a notice of the British species, distinguished according to the principles laid down by Fries, to which we must refer our readers for further information. We may also notice that an abridgment of Fries's "Memoir," in English, has been commenced since the above was written, in Henfrey's *Bot. Gazette*.



1. *L. comminis* L. (common *N.*); involucre of the fruit angular, stem paniced, peduncles slender, leaves ovate or cordate petiolate angulate-dentate, pappus none. *E. B.* t. 844.

Waste and cultivated ground, common. ☉. 7—9. — *Stems* 2—4 ft. high. *Leaves* soft and thin, slightly hairy; the *radical* ones more or less lyrate. *Flowers* small, yellow.

2. *L. pusilla* Willd. (*dwarf N.*); scape branched very thick and fistulose upwards, leaves obovate-oblong toothed, pappus a short entire border. *Hyoseris* L.: *E. B.* t. 95. *Arnoseris* Gærtn.

Corn-fields, in gravelly soils. ☉. 6, 7. — *Scapes* 6—8 inches high, more or less branched, remarkable for their clavate and fistulose extremities. *Flowers* small, yellow.

### 15. CICHÓRIUM Linn. Succory.

*Achene* turbinate, striated. *Pappus* sessile, scaly, shorter than the fruit. *Receptacle* naked or slightly hairy. *Involucre* of 8 scales, surrounded by 5 smaller ones at the base. (*Flowers blue.*)—Name: *chikouryeh*, in Arabic. The Egyptians eat a vast quantity of this vegetable.

1. *C. Pntybus* L. (*wild S.*); heads sessile axillary in pairs, lower leaves runcinate hispid on the keel, upper ones amplexicaul oblong or lanceolate entire. *E. B.* t. 539.

Borders of fields and waste places; chiefly in a light, gravelly or chalky soil. ♀. 7—10. — *Stem* 1—3 ft. high, erect, branched. *Flowers* numerous, large, of a bright but pale blue.—The *Endive* or *Succory* of the gardens is *C. Endivia*, supposed to be a native of India. The specific name of both is derived from the Arabic *Hendibeh*.

### Tribe II. CYNAROCEPHALÆ. Artichoke or Thistle Tribe.

All the corollas tubular (Tab. IV. A.), 5-cleft, and generally inflated below the mouth, uniform in the same head (perfect or rarely dioecious), or, as in *Centaurea*, with those of the circumference irregular, tubular, and neuter (Tab. IV. B.). Style swollen below its branches. (Gen. 15—23.<sup>1</sup>)

<sup>1</sup> This, like the preceding, is a very natural tribe, deriving its name from *Cynara*, the *Artichoke*, which, as well as the *Thistles*, will give a good idea of the general aspect or appearance of all in the group; and it is desirable to study the aspect, for in the following tribe (*Corymbiferae*) there are some genera which have wholly tubular florets, but they are usually quite distinct in appearance from the present, and, upon looking a little carefully into their structure, we shall find that they may be further distinguished from the Thistle tribe by the corollas not inflated below their mouth, and by the style not being swollen below its branches. Examples of the present group will be seen at

Tab. IV. A. Fig. 1. Head of flower, of *Carduus*, with the spreading uniform tubular florets within the involucre.

Fig. 2. represents the involucre cut through vertically, to show the receptacle,

16. A'ECTIUM Linn. Burdock.

*Fruit* 4-sided. *Pappus* short, pilose. *Receptacle* chaffy. *Involucre* globose, the scales with an incurved hook at the point. —Name: *αρκτος*, a bear, from the coarse texture of the involucre.

1. *A. Láppa* L. (common *B.*); leaves cordate stalked. —*α.* heads large, usually corymbose, inner scales of the involucre subulate gradually attenuated into a mucronate point longer than the florets. *A. majus* Schk. *A. Bardana* E. B. t. 2478. —*β.* heads smaller racemose, inner involucreal scales subulate mucronate shorter than the florets. *A. minus* Schk. *A. Lappa* E. B. t. 1228.

Waste places and way-sides, common. ♂. 7, 8. — Three feet or more high. Radical *leaves* very large and often slightly toothed. *Involucre* with hooked scales, which fasten themselves most pertinaciously to clothes and the coats of animals. These *scales* are sometimes glabrous, and occasionally have a more or less abundant cottony substance interwoven with them in both our varieties; whence three species have been established by some authors, but with very unsatisfactory characters. In general our *α.* has the heads of flowers on long peduncles and corymbosely arranged, but we have seen specimens with them nearly sessile and crowded or racemosely arranged as in our *β.*

17. SERRÁTULA Linn. Saw-wort.

*Achenes* obovate, compressed, glabrous. *Pappus* persistent, pilose, hairs filiform in several rows, of which the interior is the longest. *Receptacle* chaffy, the scales split into linear bristles. *Involucre* oblong, imbricated with straight unarmed scales. *Filaments* papillose: *anthers* with a short blunt appendage, ecaudate at the base. —Name: *serrula*, a little saw, which the margins of the leaves represent.

upon which are a great number of bristles, all the florets being removed from the receptacle but one.

Fig. 3. A floret from the receptacle, showing at the base the ovary or germen, crowned by the pappus or limb of the calyx, within which is the tubular corolla, inflated below the mouth, and including the stamens and articulated style, with its branches and stigmas.

Fig. 4. Summit of the style, showing the articulation (in this instance clothed by a circle of hairs).

All but fig. 1. more or less magnified.

Tab. IV. B. Fig. 1. Head of flowers of the genus *Centaurea*, with the spreading tubular florets, of two kinds, within the involucre.

Fig. 2. Floret from the centre. At its base is the germen or ovary and pappus; within the latter is the corolla, tubular, regular, perfect (having stamens and pistils), inflated below the mouth, and including the stamens and style, the latter articulated just below its branches.

Fig. 3. Floret from the circumference, neuter (having neither stamens nor pistils). At its base is an abortive germen (no pappus), upon which is seated the tubular 5-cleft, but somewhat irregular corolla.

Fig. 4. Fruit of No. 2. with its pappus.

All but fig. 1. more or less magnified.

1. *S. tinctoria* L. (*common S.*); diœcious, leaves entire or pinnatifid, involucre scales glabrous or slightly connected with a cobweb-like down, outer ones ovate appressed, inner linear coloured. *E. B. t.* 38.

Thickets and pastures; not indigenous in Scotland. *Æ. 8.* — *Stem* 2—3 ft. high, branched, stiff. *Leaves* usually pinnatifid or lyrate, and finely serrated, sometimes entire and without serratures, as in Appley Wood, I. of Wight, *Miss Taten*. *Flowers* purple. — It dyes cloth yellow.

#### 18. SAUSSUREA *De Cánd.* Saussurea.

*Achenes* glabrous. *Pappus* double, sessile; exterior of short rough bristles; inner feathery, deciduous. *Receptacle* bristly or chaffy. *Involucre* imbricated with unarmed scales. *Filaments* smooth: *anthers* with long acute appendages at the apex, and ciliated or woolly setæ at the base. — Named in honour of the two *Saussures*, father and son.

1. *S. alpina* DC. (*alpine S.*); leaves flat cottony beneath lanceolate upper ones quite entire, those of the root ovate-lanceolate toothed stalked, heads few densely corymbose, involucre villous subcylindrical, scales appressed, the outer ones shorter, anther-bristles ciliated. *E. B. t.* 599.

Moist alpine rocks. Snowdon. Saddleback. Dumfriesshire; frequent on the Highland mountains of Scotland. *Æ. 8.* — *Stem* 8—12 inches high, erect, simple, woolly. *Leaves* few upon the stem. *Flowers* rather large, purple.

#### 19. CÂRDUS *Linn.* Thistle. (Tab. IV. A.)

*Achenes* glabrous. *Pappus* equal, pilose (not feathery), sessile, united by a ring at the base and deciduous. *Receptacle* bristly. *Involucre* imbricated with spinous pointed scales. *Anthers* ecaudate. — Name: from the Celtic and Gaelic *card*, a card for combing wool, for which the involucre of some of the species may have been employed, and this again from *ard*, in Celtic, a *point*; whence also *apdos* in Greek, *arduus*, *ardeo*, &c. in Latin.

\* *Filaments* distinct, hairy; *anther-appendages* subulate. *Eucarduus*.

1. *C. nutans* L. (*Musk T.*); leaves decurrent sinuate spinous, heads hemispherical solitary drooping, scales of the involucre lanceolate, outer ones spreading. *E. B. t.* 1112.

Waste ground in dry, stony, or chalky soils. *♂. 5—10.* — *Stem* 2—3 ft. high, not much branched, cottony, interruptedly winged. *Leaves* lanceolate or oblong, deeply sinuated. *Heads of flowers* large, handsome, purple. *Involucre* slightly woolly or almost glabrous.

2. *C. acanthoides* L. (*wetted T.*); leaves decurrent lanceolate sinuate pinnatifid spinous, heads globose nearly sessile solitary

or aggregated, involucrel scales linear-subulate erect or spreading. *E. B. t.* 973. *C. crispus* L.

Way-sides and waste places. ☉. 6—8. — *Stem* 3—4 ft. high, interruptedly winged, branched. *Leaves* glabrous or cottony beneath. *Flowers* deep purple, sometimes white.

3. *C. tenuiflorus* Curt. (*slender-flowered T.*); leaves decurrent lanceolate sinuate spinous somewhat cottony beneath, heads nearly cylindrical aggregated sessile, involucrel scales ovate-lanceolate attenuate erect. *E. B. t.* 412.

Waste sandy places, especially about towns, near the sea. ☉ or ♂. 6—8. — *Stem* 2—4 ft. high, winged to the top with the decurrent bases of the leaves.

\*\* *Filaments monadelphous, papillose; anther-appendages short.*  
Silybum.

4. *C. Mariānus* L. (*Milk T.*); leaves sessile amplexicaul waved spinous the radical ones pinnatifid, scales of the involucre subfoliaceous recurved spinous at the margin. *E. B. t.* 976. *Silybum* Gært.

Banks and waste places. Rare in Scotland; about Edinburgh; on Dumbarton rock. ♂. 7. — *Stem* 3—5 feet high. Distinguishable at once by the white veins on its leaves, and the great recurved scales of the involucre. A drop of the Virgin Mary's milk was considered to have produced these veins, as that of Juno was fabled to be the origin of the *milky way*.

## 20. Cnicus Linn.: Willd. Plum-thistle.

*Achenes* glabrous. *Pappus* equal, plumose, sessile, united by a ring at the base and deciduous. *Receptacle* bristly. *Involucre* tumid, imbricated usually with spinous or mucronate scales. *Anthems* ecaudate; *filaments* distinct. — Named from κνίγω, to prick or wound.

1. *C. lanceolātus* Willd. (*Spear P.*); leaves decurrent hispid pinnatifid their segments generally two-lobed spreading spinous, involucrel scales ovate tomentose their scales lanceolate spreading. *Carduus* L.: *E. B. t.* 107.

Way-sides and pastures, frequent. ♂. 7, 8. — *Stem* 3—4 ft. high. *Leaves* white and downy beneath, spinous-hairy above; their points long and very sharp. Heads of *flowers* standing singly, large.

2. *C. palūstris* Willd. (*Marsh P.*); leaves decurrent scabrous pinnatifid spinous, involucrel scales ovate clustered, their scales ovate-lanceolate mucronate appressed. *Carduus* L.: *E. B. t.* 974.

Moist meadows and shady places, frequent. ♂. 7. — *Stem* 4—6 ft. high, erect, copiously clothed with rather short spines. Remarkable for its clustered heads of *flowers*, whose involucrel scales have the scales broad, appressed, keeled and mucronated.

3. *C. arvensis* Hoffm. (*creeping P.*); leaves spinous, heads discious by abortion, involucre ovate nearly glabrous, its scales broadly lanceolate appressed terminating in a short spreading spine, root creeping.— $\alpha$ . leaves sessile or very slightly decurrent pinnatifid very wavy. *Carduus Curt. : E. B. t. 975.*— $\beta$ . leaves oblong broad sinuately lobed slightly wavy decurrent with an interrupted spinous wavy wing, uppermost nearly sessile.— $\gamma$ . leaves lanceolate flat entire or slightly lobed. *Cirsium setosum M. Bieb. ?*

Fields and road-sides, too abundant.— $\beta$ . Croxall, Derbyshire.— $\gamma$ . Culross, by the Frith of Forth, Perthshire. *4. 7.*—We have seen no specimens of our  $\beta$ ., noticed by Babington. As to our  $\gamma$ . it has been only found in the above locality by Dr. Dewar: it may not be the plant of Bieberstein, an Eastern species, described with scarcely rigid points to the involucral scales; otherwise we must suppose it to have been introduced with ballast.

4. *C. eriophorus* Willd. (*woolly-headed P.*); leaves semi-amplexicaul not decurrent white and cottony beneath spinous-hairy above pinnatifid, lobes bifid alternate segments pointing upwards and downwards, involucre spherical woolly, the scales with a long reflexed spinous point. *E. B. t. 386.*

Waste ground and road-sides, in chalky and limestone soil. Rare in Scotland; near Edinburgh, Dumbarton, and in Appin. *3. 7, 8.*—Stems much branched, furrowed, 2 ft. high; the stoutest of the genus. Leaves acuminate, white and downy beneath; their lobes alternately pointing upwards and downwards, and terminated by sharp spines. Involucre very large; its scales linear, mucronate, much interwoven with a woolly substance.

5. *C. heterophyllus* Willd. (*melancholy P.*); leaves semi-amplexicaul (not decurrent) lanceolate soft ciliato-dentate undivided or laciniate glabrous above white and downy beneath, heads mostly solitary, involucre ovate slightly downy, scales ovate or lanceolate acuminate appressed. *E. B. t. 675.*

Moist mountain-pastures in the North, frequent. *4. 7, 8.*—Root creeping. Stems 2—3 ft. high, striated, and, as well as the under-side of the leaves, covered with a white cottony down. Involucre dark green; its scales acuminate but not spinous.

6. *C. tuberosus* Willd. (*tuberous P.*); leaves sessile (not decurrent) lanceolate deeply pinnatifid lobed fringed with minute prickles pilose above hairy or slightly cottony beneath, lower ones on long stalks, stem without wing or prickles with 1—3 terminal heads, scales of the involucre lanceolate mucronate appressed nearly glabrous, root of elliptical tapering fleshy knobs. *E. B. t. 2562.*

In a copse wood, called Great Ridge, on the Wiltshire downs. Between S. Donat's and Dunraven, Glamorganshire; *Mr. Westcombe*. Penhill, parish of Stratton St. Margaret's, 2 m. from Swindon; *Mr.*

*Woodward*. 2. 8, 9. — We do not possess specimens from any of the localities; so we are not certain if the plants from the two last belong to this species.

7. *C. pratensis* Willd. (*Meadow P.*); leaves soft mostly radical cauline ones sessile lanceolate waved at the edge or pilose above cottony beneath fringed with minute prickles, heads mostly solitary globose terminal slightly cobwebbed, scales lanceolate closely imbricated mucronate, root creeping. *Carduus Huds.*: *E. B. t.* 177. *Cirsium Anglicum Lam.*

Low wet pastures. Rare in Scotland; Isla and Arran. 2. 6—8. — About 1—2 ft. high. It is not always easy to distinguish this from the last species: the leaves in *C. tuberosus* are however usually deeply pinnatifid, here they are only sinuate or with small 2—3-cleft lobes. The true *C. Forsteri* Sm. is now allowed to be a hybrid between this species and *C. palustris*, having “leaves slightly decurrent pinnatifid spinous downy beneath, stem paniced hollow, involucre ovate rather cottony, outer scales spinous,” and the stems 3—4 ft. high, several from the crown of the root, which is caespitose and not stoloniferous. Only single specimens have been here and there observed, particularly in Sussex. Perhaps other hybrids occur, inclining sometimes more to the one parent, sometimes more to the other; but what are usually so called in herbaria are, according to Mr. II. Watson, luxuriant specimens of *C. pratensis* itself.

8. *C. acaulis* Willd. (*dwarf P.*); stem almost none or short, leaves nearly all radical glabrous lanceolate-oblong pinnatifid, lobes somewhat trifid spinous-toothed, heads mostly solitary, involucre obovate-cylindrical glabrous, scales appressed acute scarcely mucronate, outer ones ovate inner gradually longer. *Carduus L.*: *E. B. t.* 161. —  $\beta$ .? stem much branched, with several heads. *C. dubius Willd.*?

Frequent and destructive in dry gravelly or chalky pastures, in some parts of England, as Dorsetshire and Norfolk. —  $\beta$ . Saffron Walden, Essex; *Mr. G. S. Gibson*. 2. 7—9. — With  $\beta$ , we are not acquainted, only one plant was found; in cultivation the stemless plant occasionally exhibits a slightly branched stem. Mr. Borrer, however, supposes it to be a hybrid between *C. acaulis* and *C. arvensis*. In the usual form the leaves spread close to the ground, from their centre arises one sessile head of purple flowers.

(*C. oleraceus* is said to have been gathered “wild in Lincolnshire by the late Mr. Cole of Bourne, about 1823,” but seems to have disappeared: it is no way allied to any of our British species, and can have no claim to be indigenous.)

## 21. ONOPORDUM Linn. Cotton-thistle.

*Achenes* 4-ribbed, glabrous. *Pappus* pilose, rough, sessile, united into a ring at the base and deciduous. *Receptacle* honey-combed. *Involucre* tumid, imbricated, the scales spreading and spinose. *Anthems* with subulate appendages at the

apex, shortly caudate at the base.—Name: *ovos*, an ass, and *πεδῶν*, *pedere*; from the effect, according to Pliny, upon the ass which eats it.

1. *O. Acánthium* L. (*common C.*); scales of the involucre spreading subulate, leaves ovate-oblong sinuate and spinous decurrent woolly on both sides. *E. B. t.* 977. *Cat. p.* 9.

Waste-ground, road-sides, &c., in a gravelly soil. Less frequent in Scotland. ♂. 8.—*Stem* 4—6 feet high, branched and winged at the summit; wings very spinous. *Involucre* globose. *Flowers* purple. The seeds of this and of others of the Thistle tribe are much eaten by birds. It is cultivated in Scotland as the *Scotch Thistle*.

## 22. CARLINA Linn. Carline-thistle.

*Achenes* oblong, cylindrical, silky. *Pappus* feathery, sessile, hairs unequally united at the base. *Receptacle* chaffy, scales irregularly cleft. *Involucre* imbricated, tumid; the outer scales lax with numerous spines; the inner coloured, spreading, resembling a ray. *Anthems* with ciliated bristles at the base, and long appendages at the apex.—Name: the same as *Carolina*, from a tradition that the root was shown by an angel to *Charlemagne*, as a remedy for the plague which prevailed in his army.

1. *C. vulgáris* L. (*common C.*); stem many-flowered corymbose pubescent, leaves lanceolate unequally spinous and sinuate downy beneath. *E. B. t.* 1144.

Dry hilly pastures, and fields. Rare in the west of Scotland; Galloway; Benmanhead, Isle of Arran. ♂. 6—10.—One foot high, very spinous, but the spines generally short. *Ext. scales* or *leaflets* of the *involucre* much resembling the *leaves*, but smaller; *inner ones* linear, membranous, yellow, entire, spreading and forming an horizontal ray around the purplish *florets*. *Anthems* with two bristles at the base.

(Of *C. racemosa* a single specimen was found in the Isle of Arran, Galway Bay, Ireland, by Mr. Andrews; but truly indigenous species do not occur in an isolated manner, unless where expelled by cultivation.)

## 23. CENTAÚREA Linn. Knapweed, Blue-bottle, and Star-thistle. (Tab. IV. B.)

*Achenes* compressed. *Pappus* pilose or scaly or none, rarely exceeding the achene in length. *Receptacle* bristly. *Involucre* imbricated. *Florets* of the disk perfect; of the circumference narrow, funnel-shaped, irregular, without stamens or pistil (neuter), longer than those of the disk, and resembling a ray (sometimes wanting).—So named, because with a plant of this genus it is said the Centaur Chiron cured himself of a wound received in the foot from Hercules.

\* *Involucral scales linear, with a broad scarious appendage at the apex.*

1. *C. \* Jacea* L. (*brown rayed K.*); involucral appendages scarious torn the outer pinnatifid, leaves linear-lanceolate the lower ones broader and toothed, heads rayed, pappus none. *E. B.* t. 1678.

Hedges and waste places. Sussex. Belmont castle and Invercarrity, Angusshire; Craignethan Castle, Lanarkshire; *W. Gourlie, Esq.* Belfast, Ireland. 4. 8, 9. — *Lower leaves obovato-lanceolate, petioled, toothed; upper ones entire, sessile. The appendages of the scales of the involucre are pale brown, shining, the outer ones deeply pinnatifid, the middle ones torn, the uppermost sometimes nearly entire, and having the scale itself so elongated as not to be covered by the lower ones. In these respects the typical form differs strikingly from C. nigra; but there are occasionally specimens approaching it, and what is called C. transalpina is quite intermediate. Smith says that the achenes are "crowned with a simple row of very short black bristles;" in our foreign specimens there is no vestige of a pappus. Only one specimen has ever been found in Sussex and another in Lanarkshire: the Angusshire plant is more probably the rayed state of C. nigra; the Irish one, if wild, is probably in the same predicament.*

2. *C. nigréscens* Koch (*black-rayed K.*); "involucral appendages erect ovate pectinated about 3 innermost rows separated from the rest and exposing the scales, teeth ascending capillary at least as long as the breadth of the appendage, pappus almost wanting, leaves linear-lanceolate, lower ones ovate sinuate-dentate or lyrate-sinuate." *Bab.*

Meadows and pastures in the west of England. 4. 6—9. — Involucral appendages dark, of the outermost small, of succeeding rows broader and broader. Heads usually rayed. — We do not know with certainty what plant is meant; but the character agrees well with *C. transalpina* Schl., except that in our specimen we can detect no pappus whatever. The elongation of the inner scales of the involucre is not, we fear, a constant character.

3. *C. nigra* L. (*black discoid K.*); involucral appendages ovate closely and deeply fringed with spreading capillary teeth, lower leaves angulato-dentate sublyrate, upper ones lanceolate, pappus of short linear unequal scales. —  $\alpha$ . heads discoid. *E. B.* t. 278. —  $\beta$ . heads rayed. *C. nigrescens Willd.*

Meadows and pastures, frequent. —  $\beta$ . not uncommon in the S. and W. of England and Wales; rare in Scotland. 4. 6—9. — *Stem 2—3 ft. high. Leaves scabrous. Scales of the involucre with black appendages and brown teeth; one or more of the innermost rows in our var.  $\beta$  is often so long as not to be covered by the outer scales, a structure we have never seen in var.  $\alpha$ . Pappus never wanting, consisting of an outer row of very short blunt scales, and in var.  $\alpha$ . of numerous longer ones which are often deciduous; these longer ones in our var.  $\beta$ . seem either to be few in number, or entirely wanting (very caducous?). We have no objection to unite the*



rayed form to the last, as we are not aware that cultivation has ever caused it to lose its ray, or the common state of *C. nigra* to obtain one.

**\*\*** *Involucral scales lanceolate, their upper half with a scarious margin.*

4. *C. Scabiōsa* L. (*greater K.*); scales of the involucre appressed with a black pectinate margin, leaves roughish pinnatifid, segments lanceolate acute, pappus pilose about the length of the achene. *E. B. t. 56.*

Barren pastures, corn-fields, and road-sides. Rare in Scotland.

4. 7—9. — *Stem* 2—3 ft. high, erect, much branched. *Involucres* globose, very large, their scales usually cottony, with an almost black scarious margin, and paler fringe. Within the outer hairs of the pappus there is an inner row of shorter hairs.

5. *C. Cýanus* L. (*Corn B.*); scales of the involucre appressed with a brown toothed margin, leaves linear-lanceolate entire, the lowermost toothed. or pinnatifid, pappus pilose rather shorter than the achene. *E. B. t. 277.*

Corn-fields, frequent. ☉. 6—8. — *Stem* 2—3 feet high, covered with a loose cottony down, especially on the stems and under-side of the leaves. *Florets* of the disk small, purple; of the ray few, larger, bright blue, spreading. *Scales* of the involucre greenish, their margins brown. *Outer row* of the hairs of the pappus tawny, innermost white.

**\*\*\*** *Involucral scales with palmate or pinnated spines.*

6. *C. Isnárdi* L. (*Jersey S.*); scales of the involucre with palmate nearly equal spines, leaves scabrous, lower ones somewhat lyrate or incise-toothed amplexicaul, upper linear coarsely toothed tapering at the base, heads terminal solitary with one or more leaves at the base. *E. B. t. 2256.* *C. aspera* L.

Pastures in Jersey and Guernsey. 4. 7, 8. — *Flowers* purple. *Spines* of the involucre small, nearly equal in size. *Pappus* present in all the florets.

7. *C. Calcitrapa* L. (*common S.*); scales of the involucre glabrous ending in a long broad strong canaliculate spine spinulose at its base, stem divaricated, leaves unequally pinnatifid spinuloso-dentate, heads lateral solitary sessile, pappus none. *E. B. t. 125.*

Gravelly, sandy, and waste places, in the middle and S. of England, especially near the sea. ☉. 7—10. — *Flowers* purple. — The specific name is derived from an old Celtic, and now English word *trap*, a snare, and *calg*, a prickle; whence the Saxon and English word *Caltrap* (an instrument of war with long points), and the French *chasse-trappe*, which last seems to have been Latinised into *calcitrapa*.

8. *C. \*solstitialis* L. (*yellow S.*); scales of the involucre woolly palmato-spinose ending in a long slender spine, stem winged from the decurrent bases of the lanceolate unarmed entire leaves, radical ones lyrate-pinnatifid, heads terminal solitary. *E. B. t. 243.*

Occasionally seen in fields and waste places, principally in the E. and S. of England, and near Dublin. ☉. 7—9. — *Flowers* yellow, as are the slender needle-like spines of the *involucre*. *Pappus* rigid.

### Tribe III. CORYMBIFERÆ.

Heads either *discoid*; with the florets of each uniform and usually tubular (Tab. IV. C.), or those of the circumference filiform or tubular and pistillate only: — or *rayed* (Tab. IV. D.) when furnished with a ray consisting of ligulate pistillate or neuter spreading florets. Style of the perfect florets not swollen beneath its branches.<sup>1</sup> (Gen. 24—46.)

Subtribe I. TUBIFLORÆ. *Heads discoid*.<sup>2</sup> (Tab. IV. C.)  
(Gen. 24—33.)

\* *Pappus* of awns or wanting. (Gen. 24—27.)

#### 24. *BIDENS* Linn. Bur-marigold.

*Pappus* of 2—5 persistent awns, which are rough with minute

<sup>1</sup> This tribe is an extensive one, and at first sight will appear less natural and less recognizable by the inexperienced eye, than the two former tribes. The greater number of the genera and species which compose it, have radiate flowers, and then they are readily distinguished. Of this we have very familiar examples in the *Daisy* (Tab. IV. D.), the *Ox-eye* and the *Leopard's-bane*; but in many cases the ray is so small as to be hardly perceptible, as in the *Cud-weeds*; or it is wholly wanting, as in the *Hemp-agrimony*, *Bur-marigold*, and in the *Diotis* or *Colon-weed* (Tab. IV. D.). In these latter then the florets are all tubular; but the student will observe that the florets do not spread, as in most of the *Thistle* tribe, that the corolla is not remarkably inflated below the mouth, nor is the style swollen below the branches; and he would never think of arranging any one of them with the *Thistles*. A reference to our figures and a comparison of them with the figures of the two preceding tribes, will show at once the essential distinctions.

Tab. IV. C. Fig. 1. Head of flowers of *Diotis*: the florets all tubular, erect, crowded, parallel (not spreading), surrounded by the scaly and woolly involucre.

Fig. 2. Single floret taken from the receptacle, with its chaffy scale. Within the fringed scale is seen, at the base of the floret, the germen (destitute of pappus), upon which is the tubular corolla, with its two curious ears at the base, and including the stamens and pistil.

Fig. 3. Upper part of the style, showing no swelling.

Figs. 4. 5. Fruits, with the withered and persistent base of the corollas.

All more or less magnified.

Tab. IV. D. Fig. 1. Head of flowers of the *Common Daisy* (*Bellis perennis*), showing the tubular florets in the centre, and the ligulate ones forming a ray in the circumference, all within the involucre.

Fig. 2. Involucre, with the conical receptacle; all the florets being removed.

Fig. 3. Floret of the ray or circumference, having at its base the germen destitute of pappus, and above it the ligulate or strap-shaped corolla, exhibiting in its short cylindrical base only a style and no stamens: it is, therefore, imperfect, but fertile, the pistil being fertilized by the anthers of the central florets.

Fig. 4. Floret of the centre or disk, having, at the base, the germen, destitute of pappus; above that, the tubular corolla, including the stamens and style: it is, therefore, perfect.

All more or less magnified.

\* The name *Corymbifera* was given to this tribe or division of *Compositæ*, because, in many cases, as in the *Hemp-Agrimony*, *Tansy*, &c. the heads of flowers are arranged in corymb; but this is by no means universally the case.

<sup>2</sup> In *Bidens* there is occasionally a true ray. In *Tanacetum* somewhat tubular

deflexed prickles. *Receptacle* chaffy. *Involucre* of many scales; the outer ones or bracteas often leafy. (Heads *sometimes with a neuter ray*.) — Name: *bis*, double, and *dens*, a tooth; from the two awns or teeth which crown the fruit.

1. *B. cernua* L. (*nodding B.*); flowers drooping, bracteas lanceolate entire (longer than the involucre), leaves lanceolate serrated undivided, bristles of the fruit about 3 erect. *E. B.* t. 1114.

Sides of rivulets, ditches and lakes, frequent. ☉. 7—10. — *Stem* 1—2 ft. and more high, branched and slightly hispid. *Leaves* glabrous, deeply serrated. *Flowers* large, greenish-yellow.

2. *B. tripartita* L. (*trifid B.*); leaves tripartite, leaflets lanceolate deeply serrated, bristles of the fruit 2—3. *E. B.* t. 1113.

Marshy places, sides of ponds and lakes. ☉. 7—9. — Readily distinguished by its divided *leaves*. The flowers, which are slightly drooping, are smaller than those of *B. cernua*. Both species have occasionally a ray of 3-toothed neuter florets.

## 25. *DIÓTIS* Desf. Cotton-weed. (Tab. IV. C.)

*Pappus* 0. *Cor.* with two ears at the base, which border the germen and remain upon the fruit. *Receptacle* chaffy, its scales fringed. *Involucre* imbricated, hemispherical. — Named from *dis*, two, and *ous*, *ωτος*, an ear, from the ear-like appendages to the fruit.

1. *D. maritima* Cass. (*Sea-side C.*). *Santolina* L.: *E. B.* t. 141.

Sandy sea-shores, principally on the east and south of England. Jersey. ♀. 8, 9. — *Root* running deep into the sand. *Leaves* numerous, oblong, covered with a white dense tomentum, as are the scales of the involucre, which in a great measure conceal the small yellow corollas.

## 26. *TANACÉTUM* Linn. Tansy.

*Achenes* angled, crowned with a large epigynous disk and a membranous margin. *Receptacle* naked. *Involucre* hemispherical, imbricated. *Ligulate florets* short and trifid, or wanting. — (Heads *homochromous*.) — Name altered from *Athanasia*; *a*, not, and *θάνατος*, death; or that which does not quickly fade.

florets with a short ligule, and in *Artemisia*, *Gnaphalium*, and *Petasites*, slender ones with a filiform inconspicuous erect ligule are sometimes observed in the circumference, but in these cases the heads can scarcely be said to be rayed. On the other hand some species of *Senecio*, in the second subtribe, are without a ray, and some species of *Erigeron* and *Inula* have it erect and so inconspicuous that they might almost be looked for in the present subtribe.

1. *T. vulgare* L. (*common T.*); leaves bipinnatifid incisolate. *E. B. t.* 1229.

Borders of fields and road-sides. 4. 8. — *Stem* 1—3 ft. high. *Flowers* in a terminal corymb. — Whole plant bitter and aromatic, much used in medicine, and also in domestic economy.

27. *ARTEMISIA* Linn. Wormwood, Southernwood, Mugwort.

*Achenes* obovate, with a minute epigynous disk. *Pappus* 0. *Receptacle* without scales. *Involucre* ovate or rounded, imbricated. *Ligulate florets*, if any, in a single row, short or slender and awl-shaped. — (Heads *homochromous*.) — Named from *Artemis*, the Diana of the Greeks.

\* *All the florets except those of the margin sterile. Receptacle glabrous. Heads monœcious. Oligosporus.*

1. *A. campestris* L. (*Field S.*); leaves glabrous above silky beneath once or twice pinnate with linear segments, stems twiggy procumbent before flowering, scales of the involucre glabrous with a scarious margin. *E. B. t.* 338.

Dry sandy heaths, rare. Norfolk and Suffolk, principally in the vicinity of Thetford and Bury. 4. 8, 9. — *Florets* yellow: those of the disk, although apparently perfect, have no ovule in the germen, and therefore never produce seed, which is to be met with only in the single row of marginal pistillate filiform florets.

\*\* *Heads heterogamous, florets not all perfect but all fertile. Receptacle glabrous. Ahrotanum.*

2. *A. vulgaris* L. (*common M.*); leaves pinnatifid white and woolly beneath, heads somewhat racemed ovate, scales of the involucre woolly. *E. B. t.* 978.

Hedges and waste places, common. 4. 7—9. — *Stems* 3—4 ft. high, furrowed. *Florets* reddish or brownish yellow.

\*\*\* *Heads heterogamous. Receptacle hairy. Absinthium.*

3. *A. Absinthium* L. (*common W.*); leaves bipinnatifid clothed with short silky down, segments lanceolate, heads hemispherical drooping many-flowered, outer scales of the involucre linear silky, inner ones roundish scarious. *E. B. t.* 1230.

Waste places and about villages, in dry soils. 4. 8, 9. — *Stem* 1—1½ ft. high, erect. *Panicles* of flowers erect, leafy. *Floral leaves* undivided. *Heads* rather large. *Florets* dingy yellow, the marginal pistillate ones very short. — Aromatic and bitter, much used in medicine.

\*\*\*\* *Heads homogamous (all the florets perfect and fertile). Receptacle glabrous. Seriphida.*

4. *A. maritima* L. (*Sea W.*); leaves downy, radical and lower cauline ones bipinnate, upper often pinnate or pinnatifid,

segments linear, heads racemed oblong 3—5-flowered. — *α*. racemes drooping. *E. B.* t. 1706. — *β*. racemes erect. *E. B.* t. 1001. *A. Gallica Willd.*

Sea-shores and in salt-marshes. Rare in Scotland. *γ*. 8, 9. — What we consider the two varieties may be seen growing together, and sometimes from the same root; but De Candolle attributes to *α*. an involucre with constantly 5 florets, the inner scales obtuse; and to *β*. always 3 florets, with the inner involucre scales acute.

5. *A. \*cærulæscens* L. (bluish *M.*); leaves hoary most of them lanceolate undivided tapering at the base, lower ones variously lobed, heads 3-flowered oblong-cylindrical spicate, scales of the involucre hoary subcarinate. *E. B.* t. 2426.

Sea coast near Boston, Lincolnshire, and at Portsmouth. *γ*. 8, 9. — No such plant has been found in these localities for many years, and there seems to be no doubt of the allied *A. maritima* having been mistaken for it; (See Dr. Bromfield in the *Phytol.* III. p. 491.) It is peculiarly a Mediterranean species.

\*\* *Pappus pilose.* (Gen. 28—33.)

28. *EUPATORIUM* Linn. Hemp-agrimony.

*Achenes* angled or striated. *Pappus* pilose and rough. *Receptacle* naked. *Involucre* imbricated. *Styles* much exerted, with long blunt papillose branches. *Florets* all perfect (never yellow). — Named from *Eupator*, the surname of *Mithridates*, king of Pontus, who is said to have brought this plant into use.

1. *E. cannabinum* L. (common *H.*); leaves downy opposite subpetiolate 3—5-partite, their segments lanceolate deeply serrated, the middle one the longest, heads 5—6-flowered, scales of the involucre about 10, 5 outer ones short obtuse. *E. B.* t. 428.

Banks of rivers, and watery places. *γ*. 7—9 — *Stems* 3—4 ft. high, branched. *Heads of flowers* very numerous, pale-reddish purple, thickly crowded in terminal *corymbs*. — Plant slightly aromatic.

29. *LINOSYRIS* Cass. Goldylocks.

*Achenes* compressed, silky. *Pappus* in a double row, pilose, rough. *Receptacle* naked, pitted, the pits with fleshy toothed margins. *Involucre* of one row of scales surrounded by several long ones, or imbricated. *Style* scarcely longer than the corolla, with short oblong hispid branches. *Anthers* ecaudate. *Florets* all perfect, deeply 5-cleft (yellow). — Named from *Linum*, *flax*, and *osyris*, an appellation given by Pliny to a plant with supple branches and leaves like flax, obviously from the Hebrew *asar* or *oser*, *tying* or *binding*, whence also *osier* in English.

1. *L. vulgaris* L. (*Flax-leaved G.*); herbaceous, leaves linear

glabrous, scales of the involucre leafy loosely spreading. *Chrysocoma Linosyris* L.: *E. B. t.* 2505.

Limestone cliffs, rare. Berryhead, Devon; coast between Brighton and Shoreham, Sussex; Whorle-hill, Weston-supra-mare, Somerset; Ormeshead, N. Wales, abundant. 4. 8, 9. — *Leaves* very numerous, more or less dotted.

### 30. ANTENNÁRIA *Gærtn.* Everlasting.

Diœcious. *Pappus* pilose, of the sterile heads thickened or subplumose upwards. *Receptacle* naked. *Involucre* imbricated, the inner ones coloured or scariose at the end. *Anthers* with bristles at the base. — Name: from the hairs of the pappus of the sterile florets resembling the *antennæ* of some insects.

1. *A. diotica* *Gærtn.* (*Mountain E.*, or *Cat's-foot*); sterile shoots procumbent, flowering-stems erect simple, corymbs crowded, root-leaves spathulate woolly beneath, cauline ones nearly equal linear-lanceolate appressed. — *a.* leaves greenish and naked above when old. *Gnaphalium* L.: *E. B. t.* 267. — *β.* leaves woolly on both sides. *A. hyperborea* *D. Don*: *E. B. S. t.* 2640.

Mountain heaths, abundant. — *β.* Isle of Skye. 4. 6, 7. — *Flowering-stems* 3—8 inches high.

2. *A. \*margaritacea* *R. Br.* (*Pearly E.*); sterile procumbent shoots none, stems erect herbaceous tomentose branched above, leaves linear-lanceolate acuminate cottony especially beneath, heads in level topped corymbs, scales of the involucre (white) obtuse. *Gnaphalium* L.: *E. B. t.* 2018.

Moist meadows. Near Bocking, Essex; Wire Forest, Worcestershire; Lichfield, Staffordshire. Banks of the Rumney, Glamorgan-shire; and near Dalgelly, Merionethshire. Jersey and Guernsey. 4. 8. — A North American species, much cultivated: the truly pistillate plant is we believe not found in this country, even in cultivation; but occasionally the stamens are converted into pistils, and the plant become fertile.

### 31. GNAPHÁLIIUM *Linn.* Cudweed.

*Heads* heterogamous, with one or numerous rows of filiform pistillate florets in the circumference. *Pappus* pilose. *Receptacle* flat and quite naked. *Involucre* imbricated, the scales scariose towards the extremity. *Anthers* with bristles at the base. *Style* of the perfect florets with short truncated branches ciliated at the apex. — Name: γναφαλον, *soft down* or *wool*, with which the leaves are covered.

\* *Filiform florets in many rows; achenes terete.* *Eugnaphalium.*

‡ *G. luteo-album* L. (*Jersey C.*); stems herbaceous simple

branched from the base, leaves semiamplexicaul linear-oblong waved woolly on both sides, lower ones obtuse, heads in dense leafless corymbs. *E. B.* t. 1002.

Sandy fields, very rare. Jersey. Between Hanxton and Little Shelford, Cambridgeshire; and Larlingford, Norfolk. ☉. 7, 8. — *Stem* decumbent at the base, then ascending. *Heads* of flowers yellowish and conspicuous, while those of the following species are not so.

2. *G. sylvaticum* L. (*Highland C.*); stem simple nearly erect downy, heads axillary forming an interrupted leafy spike, leaves linear-lanceolate downy. — *α.* leaves narrow nearly glabrous above, spike longer more interrupted. *G. erectum* *Huds.*: *E. B.* t. 124. — *β.* leaves lanceolate woolly on both sides. *E. B.* t. 913. *G. Norvegicum* *Jacq.*

*α.* Groves, thickets and pastures, frequent in Scotland. — *β.* rare, and chiefly on the mountains once covered by the Caledonian Forest. Benchat, 5 m. N. of Blair Athole; mountain N. of Loch Erich; and Ben Wyvis, in Ross-shire; *Mr. J. Mackay*. Loch-na-Gar; *Dr. Balfour*. Canlochan, Forfarshire; *Mr. J. Henderson*. 4. 7–9. — Scales of the involucre oblong, shining, with a broad brown border. Sir J. Smith in his *Engl. Flora* (III. pp. 414–416.) has incorrectly removed to our *var. β.* those states of *G. supinum* which have spiked or tufted sessile heads of flowers.

3. *G. uliginosum* L. (*Marsh C.*); stem very much branched diffuse woolly, leaves linear-lanceolate downy, heads in terminal crowded tufts which are shorter than the leaves. *E. B.* t. 1194.

Sandy and wet places; especially where water occasionally stands. ☉. 7, 9. — A span high, much branched. *Heads* of flowers 2–3 together among the closely placed upper leaves small, sessile, forming oblong clusters at the extremity of the branches. Scales of the involucre yellowish-brown, shining, glabrous.

\*\* *Filiform florets in a single row; achenes compressed.* *Omalotheca*.

4. *G. supinum* L. (*dwarf C.*); caespitose, stem decumbent branching only from the base, flowering-stems erect, heads 1–5, leaves linear downy on both sides. — *α.* heads rather distant stalked. *E. B.* t. 1193. — *β.* heads approximated sessile. *G. sylvaticum* *Sm.* (partly).

Summits of the Highland mountains, abundant. 4. 7, 8. — Of our two varieties, *β.* is by far the most common, and is that generally known as *G. supinum* abroad; while our *α.* or Smith's plant is the *var. γ* of Persoon. *Achenes* white from numerous short appressed silky hairs, those towards the extremity being a little longer and forming as it were a very short outer pappus: in *G. sylvaticum*, the achenes are yellowish, sprinkled with a very few short hairs, and when the pappus is removed a callous ring or disk is visible, not surrounded by a circle of hairs; but the true distinction between

these two species consists in the form of the achene and number of rows of the marginal florets, characters which were overlooked by Smith.

### 32. *FILAGO* Linn. *Filago*.

*Heads* heterogamous, with one or more rows of filiform pistillate florets in the circumference. *Pappus* pilose, of the outermost row of pistillate florets very caducous or wanting. *Receptacle* conical, with 1—5 rows of scales within or among the filiform florets. *Involucre* imbricated, conical, of a few acuminate scariosc scales. *Anthems* with bristles at the base. *Style* of the perfect florets with short truncated branches ciliated at the apex.—Name: *filum, thread*, the whole plant being covered with slender thread-like hairs.

\* *Scales of the receptacle in 1—2 rows.* Oglifa.

1. *F. Gállica* L. (*narrow-leaved F.*); stem erect dichotomous, leaves linear-acute somewhat revolute on the margin, heads crowded in axillary and terminal tufts which are shorter than the leaves. *Gnaphalium Huds.*: *E. B. t.* 2369.

Gravelly and sandy fields. Castle Heveningham, and Berechurch, Essex; Hertfordshire; and said also to be found in Kent, Suffolk, Worcester, Derby, Fife, and Forfar. ☉. 7—9. — *Stem* about a span high, slender, leafy. *Heads of flowers* small, oblong, in rather distant, leafy fascicles; *outer scales of the involucre* cottony; inner ones glabrous at the points, gibbous at the base and inclosing the marginal florets. Not perhaps truly distinct from the following; in both there are two rows of pistillate florets and scales of the receptacle, which latter are not larger than the inner scales of the involucre, and we fear no other distinctive marks are to be relied on in this genus.

2. *F. mínima* Pers. (*least F.*); stem erect dichotomously branched, leaves linear-lanceolate acute cottony flat appressed, heads conical few in lateral and axillary tufts which are longer than the leaves. *Gnaphalium Sm.*: *E. B. t.* 1157. *F. montana* DC. (not Linn.)

Dry and gravelly places, frequent. ☉. 6—9. — *Stems* 4—6 inches high, slender, branched above in a dichotomous manner. *Involucres* broad at the base; *scales* cottony glabrous and slightly obtuse at the point. *Florets* yellowish. — *F. montana* L. (the same as *F. arvensis* L.) differs from this in having a solitary row of pistillate florets separated from the tubular ones by a row of scales larger than the true scales of the involucre: it is so common on the Continent that it may have been passed over in this country.

\*\* *Scales of the receptacle and pistillate florets in 5 rows.* Gifola.

3. *F. Germánica* L. (*common F.*); stem erect usually proliiferous at the summit, leaves downy, heads globose-capitate in the axils of the branches and terminal, scales of the involucre cottony with the points cuspidate and glabrous. — a. heads



scarcely angled, scales of the involucre yellowish-white, leaves oblong or lanceolate, acute or apiculate. *Gnaphalium* *Huds.*: *E. B.* t. 946.— $\beta$ . heads pentagonal, scales purplish-towards the apex, leaves grass-green with a yellowish tomentum lanceolate obtuse mucronate. *F. apiculata* *G. Sm.*— $\gamma$ . heads sharply pentagonal, scales yellowish-white, leaves of a leaden gray colour, spathulate. *F. spathulata* *Presl.*

Sandy and gravelly places, and dry pastures.— $\beta$ . and  $\gamma$ . in various places in England. ☉. 7—9.—*Stems* 6—8 inches high, erect, very leafy, terminated by a globular tuft of small ovate or conical heads of flowers, from beneath which usually spring 2—3 or more horizontal branches, in a proliferous manner, each terminated by a head of flowers. This curious mode of growth occasioned the term of *Herba impia* to be applied by the old Botanists to this plant, as if the offspring were undutifully exalting itself above the parents. We have availed ourselves of Mr. H. Watson's remarks in the *Phyt.* III. p. 314. &c., in forming the above varieties; but their most marked forms cannot be considered as distinct species, even supposing they did not vary, which however they appear to do.

### 33. PETASITES *Desf.* Butter-bur.

Subdiœcious. *Heads* monœcious (of two kinds and on different plants; either with many central tubular sterile *florets* surrounded by a row of truncated filiform fertile pistillate ones; or with 1—5 central sterile tubular florets surrounded by many rows of filiform fertile pistillate ones). *Pappus* pilose. *Anthers* without bristles at the base. *Receptacle* naked. *Involucre* imbricated in two rows of lanceolate herbaceous scales.—(*Scapes with a many-headed thyrsus, appearing before the leaves*).—Name: *πετασος*, a covering to the head or an umbrella, from the great size of its foliage.

1. *P. vulgaris* *Desf.* (common *B.*); leaves roundish-cordate unequally toothed downy beneath, the lobes approximate.—*A.* florets nearly all sterile. *Tussilago Petasites* *L.*: *E. B.* t. 431.—*B.* florets nearly all fertile. *Tuss. hybrida* *L.*: *E. B.* t. 430.

\* Wet meadows, to which it is very injurious, and road-sides. 2. 3—5.—*Root* extensively creeping, and thus multiplying the plant. *Leaves* very large. *Flowers* (appearing before the leaves) of a pale flesh colour, smaller, more lax, and in a longer thyrsus on the fertile plant. The early blossoming of this rank weed induces the Swedish farmers to plant it near their bee-hives. Thus we see in our gardens the bees assembled on its affinities, *P. alba* and *fragrans*, at a season when scarcely any other flowers are expanded.

(Of *Homogyne alpina* *Cass.*, or *Tussilago alpina* *L.*, there is a specimen in herb. Brodie, from G. Don, with the following station attached to it: "On rocks by the sides of rivulets on the high mountains of Clova, as on a rock called Garry-barns;" and the same is mentioned

in Headrick's Agric. of Forfarshire; but we are not prepared to admit the plant as indigenous.)

Subtribe II. *RADIATÆ*. *Heads with a ligulate ray* (Tab. IV. D.)  
(Gen. 34—46.)

\* *Pappus pilose in the florets of the disk, sometimes wanting in those of the ray.* (Gen. 34—42.)

34. *TUSSILÁGO* Linn. Colt's-foot.

*Heads* monœcious, all alike. *Achenes* terete. *Pappus* pilose. *Florets* of the ray long, narrow, numerous in many rows; of the disk few, sterile (both yellow). *Anthers* without bristles at the base. *Receptacle* naked. *Involucre* formed of a single row of equal, linear scales. (Scapes *single-flowered, appearing before the leaves.*)—Name altered from *tussis*, a cough, in the cure of which the plant has been employed.

1. *T. Fúrfara* L. (*Colt's-foot*); scape single-flowered imbricated with scales, leaves cordate angular toothed downy beneath. *E. B. t.* 429.

Moist and clayey soils, too abundant. *Fl.* March, April, before the leaves. 4.—*Flowers* yellow; *florets* of the disk few. The down of the leaves makes good tinder. The leaves themselves have been used medicinally, as an infusion, or smoked like tobacco, for the relief of asthma.

(*Nardosmia fragrans* Reich., or *Tuss. fragrans* L. is said to be naturalized in the south of England and Wales. This genus differs only from *Petasites* by the pistillate florets having a (sometimes minute) ligule.)

35. *ÉRIGERON* Linn. Flea-bane.

*Achenes* compressed. *Pappus* pilose, rough. *Florets* of the disk fertile; of the ray numerous, in several rows, very narrow (of a different colour from the disk). *Receptacle* naked. *Involucre* imbricated with linear scales. *Anthers* without bristles at the base.—Named from *ἥρι*, early, and *γερων*, an old man; from the early ripening of the gray seed-down.

1. *E. \*Canadénsis* L. (*Canada F.*); usually hairy, leaves lanceolate nearly entire harshly ciliated, heads numerous panicled, ray shorter than the involucre. *E. B. t.* 2019.

Waste and cultivated ground, in England, occasionally. ☉. 8, 9. —*Florets* of the disk whitish-yellow; of the ray whitish, tinged with red, scarcely longer than the *pappus*.

2. *E. ácris* L. (*blue F.*); peduncles 1-headed alternate somewhat corymbose, ray erect scarcely longer than the disk, inner pistillate florets filiform, *pappus* as long as the florets of the ray, leaves lanceolate obtuse. *E. B. t.* 1158.

Dry gravelly or chalky pastures, walls, &c. ♂. 7, 8. — *Stems* 1—1½ ft. high; whole plant scabrous, hispid, erect, panicled above and leafy; *heads* of flowers terminal, pedunculate from the axils of the leaves. *Leaves* below tapering into a foot-stalk. *Florets* of the disk yellow; of the ray ligulate, purplish. *Pappus* tawny.

3. *E. alpinus* L. (*alpine F.*); stems with one or few heads, florets of the ray nearly twice as long as the involucre, innermost pistillate florets tubular-filiform without a ligule, leaves lanceolate, radical ones spatulate. *E. B. t.* 464. — *E. uniflorus* L.: *E. B. t.* 2416.

Highland mountains, not uncommon on the Breadalbane and Clova ranges. ♀. 7, 8. — Hairy or hispid, like the last, but with *leaves* much longer in proportion. *Stem* 3—5 inches high, simple with rarely more than one *head* of flowers at the summit. The *ligules* of the pistillate *florets* become gradually narrower and sometimes shorter as they approach the disk, the innermost row being wholly or partially destitute of them. We have examined original specimens of Smith's *E. uniflorus* from G. Don (in herb. Brodie) from Ben Lawers: they have quite the structure of the florets of *E. alpinus*, although the ligules be shorter and more erect from growing in a more exposed situation: the involucre, although rather more hairy, is not woolly as in the arctic *E. uniflorus* of Linnaeus, to which *E. alpinus* Less. belongs, and also *E. pulchellus* β. DC.

### 36. *A'STER* Linn. Starwort. Michaelmas Daisy.

*Achenes* compressed. *Pappus* pilose, in many rows. *Receptacle* naked. *Involucre* imbricated, sometimes with a few scales on the peduncle. *Anthers* without bristles at the base. *Florets* of the disk yellow; of the ray purple or white, and in 1 or very rarely 2 rows. — Name: *aster*, a *star*, which the flowers resemble.

1. *A. Tripólium* L. (*Sea S. or M.*); stem glabrous corymbose, leaves linear-lanceolate fleshy obscurely 3-nerved, scales of the involucre lanceolate membranous obtuse all imbricated, the inner ones longer. *E. B. t.* 87. — *Tripolium vulgare* Nees.

Salt-marshes, frequent. ♀. 8—9. — The florets of the ray are sometimes wanting.

### 37. *SOLIDÁGO* Linn. Golden-rod.

*Achenes* terete. *Pappus* pilose, rough, in a single row. *Receptacle* naked. *Involucre* closely imbricated. *Anthers* without bristles at the base. *Florets* of the ray few, in one row, and, as well as those of the disk, yellow. — Name: *solidare*, to *unite*; from the vulnerary properties that have been attributed to some species.

1. *S. Virgaúrea* L. (*common G.*); cauline leaves lanceolate

the lower ones elliptical, racemes panicle erect crowded, involucre scales lanceolate acute, achenes slightly downy. *E. B. t. 301.* —  $\beta$ . small, with broader radical leaves. *S. Cambrica Huds.*

Woods and thickets. —  $\beta$ . in mountainous countries. *4. 7—9.* — Lower leaves broad, stalked. Very variable in its size, and in its more or less compact inflorescence. Used as a vulnerary and diuretic.

(*S. lanceolata* L. has been sometimes found naturalized, it is a N. American species.)

38. SENÉCIO *Linn.* Groundsel. Ragwort. Fleawort.

*Achenes* terete, all of them with a pilose pappus. *Receptacle* naked. *Involucre* cylindrical, its scales linear, equal, with or without several smaller ones at the base, their tips often brown. *Anthers* without bristles at the base. *Style* scarcely longer than the corolla, truncated and ciliated at the extremities of its branches. (*Flowers*, in the British species, yellow, their ray sometimes wanting.) — Named from *senex*, an old man. (See *Erigeron*.)

\* *Florets of the ray ligulate and rolled back, or wanting.*

1. *S. vulgaris* L. (*common G.*); ray revolute or usually wanting, leaves semiamplexicaul pinnatifid toothed, heads in clustered corymbs, involucre conical glabrous, outer scales very short, achenes silky. *E. B. t. 747.*

Waste ground, fields and hedges, abundant. ☉. 1—12. — A span to a foot high. *Heads of flowers* small, yellow. Birds are fond of the buds and young leaves.

2. *S. viscosus* L. (*stinking G.*); ray revolute, leaves pinnatifid glandular-hairy viscid, scales of the involucre lax hairy, stem branching diffuse, involucre viscid, outer scales half the length of the inner, achenes glabrous. *E. B. t. 32.*

Waste ground, especially on chalky or gravelly soil, in many places. ☉. 7, 8. — *Stems* 1—2 feet high, much branched and spreading. Remarkable for its viscid hairs and fetid smell.

3. *S. sylvaticus* L. (*Mountain G.*); ray revolute sometimes wanting, leaves sessile pinnatifid lobed and toothed often eared at the base, involucre downy, outer scales very short glabrous, stem erect straight, heads corymbose, achenes silky. *E. B. t. 748.* —  $\beta$ . leaves distinctly eared and amplexicaul at the base. *S. lividus* L. ? : *E. B. t. 2515.*

Dry upland soils, banks, and gravelly pastures. ☉. 7—9. — *Stem* 1½—2 ft. high. *Leaves* finely divided. Plant with a disagreeable smell, but not so powerful as that of *S. viscosus*. The *S. lividus* of Linn. is a Spanish species, and unknown to us; but whatever it be, we fear the plant of *E. Bot.* cannot be considered specifically distinct from the present.

**\*\* Heads with a spreading ray. Involucre with small scales at the base. Leaves pinnatifid.**

4. *S. \*squidllidus* L. (*inelegant R.*); ray spreading its ligules elliptical entire, leaves glabrous pinnatifid with distant oblong and toothed segments, involucre glabrous its outer scales few small, achenes silky. *E. B. t. 600.*

On walls in and about Oxford. Walls and rubbish at Biddeford, Devon. ☉. 6—10. — A most distinct species, but scarcely indigenous.

5. *S. tenuifolius* Jacq. (*hoary R.*); ray spreading its ligules oblong, leaves closely pinnatifid pale and downy beneath their margins somewhat revolute, stem erect loosely cottony, all the achenes hairy. *E. B. t. 574.* *S. erucæfolius* L. ?

Hedges and road-sides in England, especially in a chalky or gravelly soil. Woodhall, near Airdrie; Berwickshire, in various places. ♀. 7, 8. — Allied to the following, but with more regular, less divided, and less spreading segments to the leaves. Root creeping.

6. *S. Jacobæ'a* L. (*common R.*); ray spreading, leaves lyrate bipinnatifid, segments divaricated toothed glabrous, stem erect, achenes of the disk hairy, those of the ray glabrous, involucre hemispherical. *E. B. t. 1130.*

Way-sides and neglected pastures, too plentiful. ♀. 7—9. — Stems 2—3 feet high, striated, branched. Heads of flowers large, golden-yellow, in erect corymbs. A var. is occasionally found without the ray.

7. *S. aquaticus* Huds. (*Marsh R.*); ray spreading, leaves lyrate serrated glabrous the lowermost obovate and undivided, involucre hemispherical, achenes all glabrous. *E. B. t. 1131.*

Wet places and by the sides of rivers and ditches. ♀. 7, 8. — Heads of flowers larger than in the last species.

**\*\*\* Heads with a spreading ray. Involucre with small scales at the base. Leaves undivided.**

8. *S. paludósus* L. (*great Fen R.*); ray spreading its ligules toothed, leaves semiamplexicaul lanceolate sharply serrated somewhat woolly beneath, stem perfectly straight hollow rather woolly, corymbs terminal spreading, bractæas subulate. *E. B. t. 650.*

Rare; ditches and fens in the east of England; Suffolk, Lincolnshire, and Cambridgeshire. ♀. 6, 7. — Stem 5—6 feet high. Leaves and heads of flowers large, the latter of many linear toothed rays.

9. *S. Saracénicus* L. (*broad-leaved G.*); ray spreading its ligules nearly entire, leaves lanceolate sessile minutely and irregularly serrate glabrous, stem erect solid glabrous, corymbs

terminal of rather few flowers, bractæas linear-setaceous. *E. B.* t. 2211.

Moist meadows and pastures, in several parts of England and Scotland, but very local, and probably often escaped from gardens. Woods at Bantry. 4. 7, 8. — Stem 3—5 feet high: habit of the last: heads of flowers much smaller, with broader florets of the circumference, which are sometimes wanting.

\*\*\*\* Heads with a spreading ray. Involucre without scales at the base. Leaves nearly entire.

10. *S. palustris* DC. (*Marsh F.*); shaggy, stem much branched fistulose, leaves broadly lanceolate semiamplexicaul, lower ones sinuato-dentate, heads corymbose, achenes glabrous many-ribbed. *Cineraria L.*: *E. B.* t. 151.

Margins of pools and ditches, rare; chiefly in Norfolk and Cambridgeshire. 4. 6, 7. — Ligulate florets about 20.

11. *S. campêstris* DC. (*Field F.*); woolly, stem simple, root-leaves elliptical narrowed below nearly entire those of the stem (small) lanceolate, flowers umbellate, achenes downy. *Cineraria Retz.* *C. integrifolia With.*: *E. B.* t. 152.

Chalky downs in the middle and S. of England and on maritime rocks, Hoyhead. 4 ? 5, 6. — Ligulate florets 9—12. Ribs of the achenes not prominent.

### 39. DORONICUM Linn. Leopard's-bane.

Achenes terete. Pappus pilose, wanting to the florets of the ray. Receptacle naked, or nearly so. Involucre with the scales equal, in a double row. Anthers without bristles at the base. Style scarcely longer than the corolla, truncated and ciliated at the extremity of its branches. (Flowers yellow.) — Named from *δωρον*, a gift, and *νικη*, victory, because it is said to have been formerly used to destroy wild beasts, whence the English name of *Leopard's-bane*; or, some say, from *Doronigi*, or *durungi*, the Arabic name of the *Leopard's-bane*, Latinized by earlier botanists into *doronicum*, and enumerated by Linnæus among barbarous names which ought to be rejected. He, however, retained it, perhaps because its sound, if not its sense, is Greek.

1. *D. \*Pardaliâches L. (great L.)*; leaves cordate toothed the lowermost on long naked petioles, the intermediate with the petioles dilated into two broad semiamplexicaul ears at the base, the uppermost sessile and amplexicaul. *E. B. S.* t. 2654.

Catton, by Norwich. Mountains of Northumberland. Den of Dupplin and Dalkeith park, &c., Scotland. 4. 5—7. — Stem simple or corymbosely branched, the lateral branches being much longer than the shortly stalked head that terminates the stem. Achenes of the disk hairy; of the ray glabrous (or slightly hairy, DC.).

2. *D. plantagineum* L. (*Plantain-leaved L.*); leaves toothed, radical ones on naked stalks ovate or slightly cordate produced at the base, cauline ones sessile except the lowest which has a winged stalk with amplexicaul auricles, intermediate ones cordate-oblong, upper ovate-acuminate, achenes of the ray glabrous. *D. Pardalianches* E. B. t. 630.

Salinghall, and Widdington, Essex. Den of Dupplh; Saline, Fifeshire; Cleish; &c. 2. 6, 7. — *Stem* simple or branched, heads on long leafless peduncles. The allied *D. scorpioides* has the achenes of the ray as hairy as those of the disk.

#### 40. *INULA* Linn. *Inula*.

*Achenes* terete or angled. *Pappus* pilose, in 1 row. *Receptacle* naked. *Involucre* imbricated. *Anthems* with bristles at their base. (*Flowers* yellow.) — Name said to be a contraction of *Helenium*, the plant being supposed to have sprung from the tears of Helen.

1. *I. Helénium* L. (*Elecampane*); leaves amplexicaul somewhat toothed, ovate wrinkled, downy beneath, outer scales of the involucre ovate downy reflexed leafy, inner ones obovate, ray twice as long as the disk, achenes 4-angled glabrous. E. B. t. 1546.

Moist pastures, rare, but found in several places of England, and Ireland. Not wild in Scotland. 2. 7, 8. — *Stem* 3—5 feet high, branched. *Heads* large, terminal, solitary, with many narrow, tricuspidate, yellow rays.

2. *I. Conyza* DC. (*Ploughman's Spikenard*); leaves pubescent ovate-lanceolate serrated the upper ones entire, stem herbaceous corymbose, scales of the involucre all linear recurved leafy, ray scarcely longer than the disk, achenes terete slightly hairy. *Conyza squarrosa* L.: E. B. t. 1195.

Frequent on chalky or clayey soil. Rare, if really wild, in Scotland. 3. 8—10. — *Stem* 2—3 feet high. *Panicle* leafy, with the leaves entire. Lower leaves stalked. *Heads* almost discoid: *florets* of the circumference very small, filiform with a short ligule.

3. *I. crithmoides* L. (*golden-Samphire*); leaves linear fleshy generally 3-toothed at the extremity, scales of the involucre appressed linear acuminate, ray nearly twice the length of the disk, achenes terete villous. E. B. t. 68.

South and west shores of England and Wales, in salt-marshes, and on sea-side rocks; extending as far north as Galloway in Scotland. Howth, Ireland. 2. 7, 8. — One foot high, a little branched at the summit, each branch bearing a solitary head of flowers.

#### 41. *PULICÁRIA* Gertn. *Flea-bane*.

*Achenes* somewhat terete. *Pappus* double: outer one short,

membranous; *inner* pilose, rough. *Receptacle* naked. *Involucre* hemispherical, closely imbricated with numerous scales. *Anthers* with bristles at their base. (*Flowers* yellow.)—Name: *pulex*, a *flea*, which is supposed to be driven away by its powerful smell.

1. *P. dysentérica* Cass. (*common F.*); leaves oblong cordate or sagittate and amplexicaul at the base wrinkled downy, stem woolly paniced, scales of the involucre setaceous, ray twice as long as the disk, outer pappus cup-shaped crenulate. *Inula L.*: *E. B. t.* 1115.

Moist and watery places, frequent in England and in the county of Dublin. Rare in Scotland; Mull of Galloway, and Bennanhead, Arran. 4. 7—9. — About 1 foot high.

2. *P. vulgáris* Gærtn. (*small F.*); leaves lanceolate wavy hairy narrow at the base and semiamplexicaul, stem much branched hairy, ray scarcely longer than the disk, outer pappus setulose-laciniate. *Inula Pulicaria L.*: *E. B. t.* 1196.

Moist sandy places, especially where water has stood, in England: not found in Scotland or Ireland. ☉. 8, 9.

\*\* *Pappus* none, or of short teeth or scales only. (Gen. 42—46.)

#### 42. *BÉLLIS* Linn. Daisy. (Tab. IV. D.)

*Achenes* compressed, with a minute epigynous disk. *Pappus* none. *Receptacle* naked, conical. *Involucre* hemispherical, its scales obtuse, equal, in a single row. (Florets of the disk yellow, those of the ray white tinged with red.) — Named from *bellus*, pretty.

1. *B. perénis* L. (*common D.*); perennial, scape single-headed, leaves spathulate obovate crenate 1-nerved. *E. B. t.* 424.

Pastures, frequent. 4. 2—10. — Who is there, whether in youth or in age, that is not sensible of the charms of this “modest crimson-tipped flower”? It is, therefore, in France called *Marguerite*, a term expressive of beauty, from *margarita*, a *pearl*.

#### 43. *CHRYSAÑTHEMUM* Linn. Ox-eye.

*Achenes* of the disk somewhat terete: epigynous disk large. *Pappus* 0. *Receptacle* naked. *Involucre* hemispherical or nearly flat; the scales imbricated, membranaceous at their margins. — Name: *κρῶς*, gold, and *ανθεμον*, a flower, from the colour of the blossoms in some of the species.

\* *Achenes* of the disk and ray similar. *Leucanthemum*.

1. *C. Leucanthemum* L. (*great white O.*); leaves oblong obtuse



cut and pinnatifid at the base, radical ones obovate petiolate, stem erect branched (ray white). *E. B.* t. 601.

Dry pastures, abundant. 4. 6, 7. — *Stems* 1—2 feet high, furrowed. *Heads of flowers* large, their *disk* yellow, the *ray* white.

\*\* *Achenes of the ray angled and somewhat winged.*

2. *C. ségetum* L. (*Corn Marigold, yellow O.*); leaves amplexicaul glaucous inciso-serrate above toothed at the base, (ray yellow). *E. B.* t. 540.

Corn-fields, frequent; rare about Edinburgh. ☉. 6—10. — One foot or more high. *Flowers* large, deep yellow.

#### 44. MATRICARIA Linn. Wild-Chamomile. Feverfew.

*Achenes* all angular, crowned with a large epigynous disk. *Pappus* a membranaceous border, or wanting. *Receptacle* naked. *Involucre* conical, hemispherical or nearly flat, the scales imbricated, usually membranaceous at their margins. — Named from its reputed medicinal virtues.

1. *M. Parthénium* L. (*common F.*); leaves petiolate flat bipinnate the segments ovate cut, peduncles branched corymbose, stem erect, involucre hemispherical downy, receptacle convex, pappus short toothed. *Pyrethrum Sm.*: *E. B.* t. 1231. *Matricaria* L.

Waste places and in hedges. 4. 7—9. — *Stem* 1—2 ft. high, branched. *Disk* yellow; *ray* very short, white. *Plant* bitter and tonic.

2. *M. inodóra* L. (*Corn W., or scentless Mayweed*); leaves sessile bipinnatifid the segments capillary, stem branched spreading, receptacle convex, pappus entire or 4-lobed. — *α.* receptacle ovate. *Pyrethrum Sm.*: *E. B.* t. 676. — *β.* *maritimum*; leaves fleshy, receptacle hemispherical. *M. maritima* L. *Pyrethrum E. B.* t. 979.

Fields and way-sides, common. — *β.* sea-coast in many places, especially in Scotland. ☉. 6—11. — *Stem* about 1 foot high. *Flowers* large, upon long naked peduncles. *Disk* very convex; *ray* large. *Plant* slightly aromatic. *Achenes* with 3 prominent thick smooth ribs, and more or less rugose intermediate spaces; of these last the two internal ones are narrow, the external one broad and marked at the apex with an imperfect smooth rib, on each side of which there is an oblong smooth glandular depression. In the *var. β.* the ribs are broader than in *var. α.* and consequently all the intervening spaces and the glandular depressions are narrower; but they seem to vary in this respect in the same head. De Candolle places them in different genera, on account of the more elevated receptacle of the one than the other.

3. *M. Chamomilla* L. (*wild C.*); leaves glabrous bipinnatifid the segments capillary, involucre nearly plane its scales obtuse, receptacle cylindrical-oblong hollow. *E. B.* t. 1232.

Corn-fields and waste ground, in various places. ☉. 6—8. — *Stem* about 1 foot high, erect and branched. *Heads of flowers* with a conical *disk*; the *ray* very obtuse, truncate and toothed. *Receptacle* narrow, much elevated, twice as long as broad, and often acute. *Scales of the involucre* scarcely so membranaceous at the margin as in the preceding species. This has a bitter taste, and a faint but aromatic smell, not unlike that of the common or true *Chamomile* (*Anthemis nobilis*).

45. A'NTHEMIS Linn. Chamomile.

*Achenes* terete or obscurely 4-angled. *Pappus* a membranaceous border or 0. *Receptacle* convex, chaffy. *Involucre* hemispherical or nearly plane, the scales imbricated, membranaceous at their margins. *Florets of the disk* terete, of the *ray* oblong-linear. — Name: *ανθεμης*, a flower, from the profusion of its blossoms.

\* *Florets of the ray with a style.*

† *Scales of the receptacle thin, membranous, obtuse.*

1. A. *nobilis* L. (common C.); leaves bipinnate segments linear-subulate a little downy, receptacle conical its scales scarcely longer than the disk. E. B. t. 980.

Dry gravelly pastures and waste places, in several parts of England. Isles of Cumbrae and Bute, Scotland. Kerry, Ireland. ♀. 7—9. — *Stem* about a foot long, procumbent and much branched; each branch terminated by a single flower, whose *disk* is yellow, at length conical, and *ray* white. The whole plant is intensely bitter, highly aromatic and much used medicinally. Its principal virtues are supposed to reside in the *involucre*, which contains an essential oil. — *Chamomile* is derived from χαμαι, on the ground or dwarf, and μηλον, an apple; because the plant smells like apples, or rather like quinces.

†† *Scales of the receptacle with an acute rigid point.*

2. A. \**Anglica* Spr. (Sea Ch.); leaves pinnatifid somewhat hairy, lobes inciso-serrate acute bristle-pointed rather fleshy, "receptacle flat, its scales subulate shorter than the unopened florets, achenes crowned with a very narrow entire border." Bab. A. *maritima* L. ? Sm. ? E. B. t. 2370.

Sea-coast at Sunderland; Mr. Robson; Mr. Backhouse (1844). ♀. 7. — With this we are entirely unacquainted: it is probably some Continental species cast upon our shores, and in an abnormal state. De Candolle and others maintain that it is quite different from the true plant of Linnaeus, which is apparently that described by Smith in the English Flora, a species supposed to be peculiar to the south of Europe, having fleshy glabrous or hoary dotted leaves, and an unequally and broadly 1—2-toothed margin to the achenes. — The plant mentioned in our last edition as having been found at Dunboy Quay, Bearhaven, Co. Cork, Ireland, by Mr. W. Wilson, proves to be *Anacyclus radiatus* Loisel, brought there perhaps with ballast.

3. *A. \*tinctória* L. (*Ox-eye C.*); leaves bipinnatifid serrated downy beneath, stem erect branched subcorymbose, receptacle hemispherical, achenes crowned with an entire border. *E. B. t.* 1472.

Banks of the Tees, Durham; Essex; and near Forfar, Scotland. ☉. or ♂. 7, 8. — *Stem* a foot or more high, cottony, as are the *scales* of the *involucre*. *Flowers* solitary, large, *entirely* yellow. A very doubtful native, not now found in any of the stations assigned for it: it is often cultivated.

4. *A. arvensis* L. (*Corn C.*); leaves bipinnatifid segments linear-lanceolate pubescent, receptacle conical its scales lanceolate, fruit crowned with an entire pappus. *E. B. t.* 602.

Corn-fields and way-sides, in several places, but very local. About Dunfermline; near Edinb. and Linlithgow; between Ayr and Prestwick; Lanarkshire and Forfarshire. ♂. 6—8. — *Stem* upright, much branched, and, as well as the *leaves*, hoary with down; each branch terminated with a large *flower*, whose *disk* is yellow, the *ray* broad and white. *Florets* of the *ray* sometimes sterile; in which case almost the only certain character connected with the flowers, that will distinguish this species from *A. Cotula*, is the presence of a style.

**\*\* Florets of the ray without any trace of a style. Scales of the receptacle with an acute point.**

5. *A. Cótula* L. (*stinking C.*); leaves bipinnatifid glabrous their segments subulate, receptacle conical its scales linear-setaceous, pappus none, tube of the corolla 2-winged. *E. B. t.* 1772.

Waste places, corn-fields, and by road-sides. ☉. 6—9. — *Stem* a foot or more high, glabrous. *Heads* of *flowers* solitary, terminal, their *disk* convex, pale yellow; *ray* rather large, white, its *florets* *neuter* (inaccurately represented with a style in *E. Bot.*). The whole plant has a fetid smell, and is said to blister the hands of those who gather it. When examined with a microscope, it is seen to be sprinkled all over with little glands, in which the acrid matter is probably lodged. The Scotch stations, and many of those in the N. of England, usually given for this species, belong to *A. arvensis*.

#### 46. *ACHILLÉA* Linn. Yarrow. Milfoil.

*Pappus* 0. *Receptacle* flat, chaffy. *Involucre* ovate, imbricated. *Florets* of the *ray* 5—10, roundish or obcordate. — So named because its healing virtues were said to be first discovered by *Achilles*.

1. *A. Ptármica* L. (*Sneeze-wort Y.*); leaves shining glabrous linear-lanceolate acuminate uniformly and sharply serrate, serratures appressed scabrous at the margin, ray 8—12-flowered. *E. B. t.* 757.

Moist meadows and pastures, especially in mountainous districts. 2. 7, 8. — *Stem* 1—3 feet high, erect, terminating in a rather large *corymb*, the *disk* as well as *ray* of whose *flowers* is white. *Leaves* sometimes slightly dotted. — When dried and pulverized, the plant has been employed to excite sneezing.

2. *A. \*decolorans* Schrad. (*dotted-leaved Y.*); leaves downy closely dotted linear-lanceolate coarsely and doubly serrate pectinate at the base, serratures spreading, segments at the base radiating, ray 5—6-flowered. *A. serrata* Sm. (not Retz): *E. B. t.* 2531.

Near Matlock, Derbyshire. Somerset. 2. 9. — Commonly cultivated in gardens under the name of *A. alpina*, to which, as well as to *A. serrata*, it appears to approach very closely; the native country of all the three would seem to be Siberia, if indeed some be not mere garden productions. *Ligules* buff-coloured.

3. *A. Millefolium* L. (*common Y. or M.*); leaves deeply bipinnatifid, lobes incise, segments linear acute, stems furrowed, scales of the involucre nearly glabrous. *E. B. t.* 758.

Pastures and way-sides, frequent. 2. 6—9. — *Heads* of *flowers* small, white, or sometimes rose-coloured. *Leaves* woolly or nearly glabrous. The quality of this plant is highly astringent, and the Highlanders are said to make an ointment of it, which dries and heals wounds.

4. *A. \*tomentosa* L. (*woolly yellow M. or Y.*); leaves woolly pinnatifid, lobes crowded 2—3-cleft, segments linear acute, corymbs repeatedly compound, scales of the involucre woolly. *E. B. t.* 2532.

Dry hilly pastures, in Scotland. Spittle-hill, north-west of Balvic, Dumbartonshire; and near Paisley. Auchlunkart, Bamfshire; *P. Stewart, Esq.* Near Newcastle, Co. Down, Ireland; *Miss Keown*. 2. 8. — *Stem* a span or rather more in height. Readily recognized by its small size, downy *leaves*, and much branched *corymbs* of yellow *flowers*. Formerly much cultivated as a medicinal plant, as well as for its beauty. Of the Scotch stations the one near Balvie seems to be given on the authority of a solitary specimen escaped from Mugdock Castle garden: the Paisley one is quite erroneous: that at Auchlunkart was in the sand of a river, whither the plant had been washed down from a portion of an old garden about 100 yards distant: the Irish habitat cited in *E. Bot.*, and the new one mentioned above, are no doubt equally questionable.

### *Anomalous Genus.*

#### 47. XANTHIUM<sup>1</sup> Linn. Bur-weed. (Tab. V.)

Monœcious. — *Barren fl.* *Involucre* of few scales, with many

<sup>1</sup> Tab. VII. represents, at fig. 1. a flowering specimen of *Xanthium strumarium*; the upper clusters or heads consist of barren, the lower of fertile, flowers.

small capitate *flowers*, upon a common receptacle. *Cal.* 0. *Cor.* obovate, sessile. *Anthers* terminating a tube which is inserted at the base of the cor. *Germen* abortive. — *Fertile fl.* *Involucre* single, prickly, with 2 beaks, entirely enclosing 2 flowers; the 2 *stigmas* only protruded from small apertures within the beaks. *Cal.* 0. *Cor.* 0. *Fruit* 1-seeded, included in the enlarged and hardened *involucre*. *Juss.* — Named from *ξανθος*, *yellow* or *fair*; because an infusion of this plant was supposed to improve the colour of the hair.

1. X. *\*strumarium* L. (*broad-leave* B.); stem unarmed, leaves cordate angulato-dentate with 3 principal nerves at the base, fruit downy its beaks straight the prickles hooked. *E. B.* t. 2544.

Rare, in waste ground in the S. of England, and Kerry, Ireland. ☉ 8, 9. — A rank, weed-like plant, remarkable for the curious structure of its *flowers*, and the prickly *involucres* which surround the *fertile* ones, enlarging and becoming part of the *fruit*. It is scarcely naturalized, and rarely ripens seed in the S. of England.

## ORD. XLVII. CAMPANULACEÆ *Juss.*

*Calyx-tube* adnate with the *ovary*, mostly 5-lobed, lobes persistent. *Corolla* regular or irregular, mostly 5-lobed, marcescent, æstivation valvular. *Stamens* free from the corolla and equal in number with its segments, free or more or less combined. *Anthers* 2-celled, distinct or rarely cohering, opening longitudinally. *Ovary* with two or more polyspermous cells. *Style* 1, pubescent on the upper half. *Stigma* simple or lobed, naked (not surrounded by a circle of hairs). *Fruit* dry, opening between the dissepiments. *Seeds* fixed to the axis. *Albumen* fleshy: *embryo* straight. — Herbaceous or suffruticose. Leaves mostly *alternate*, without *stipules*. *Flowers* generally *blue* or *white*. Lactescent and bitter.

1. CAMPANULA. *Cor.* campanulate or sub-rotate; segments broad and shallow.
2. PHYTEUMA. *Cor.* rotate; segments long, linear. *Anthers* distinct.
3. JASIONE. *Cor.* rotate; segments long, linear. *Anthers* cohering at their base.

Fig. 2. Scale of the involucre with a barren flower, exhibiting the corolla and the staminal tube with five anthers.

Fig. 3. Fertile flower; consisting of a prickly monophyllous involucre with 2 beaks, and the branches of the styles protruded beyond the beaks.

Fig. 4. The same cut open to show the two pistils or flowers without calyx or corolla.

Fig. 5. Fruit, enveloped by the persistent involucre (natural size).

Fig. 6. Single fruit.

Fig. 7. Seed.

Fig. 8. Embryo.

Fig. 9. The same, one cotyledon being removed.

Fig. 10. The same, cut vertically through the two cotyledons.

## 1. CAMPANULA Linn. Bell-flower.

*Cor.* campanulate or subrotate, with 5 broad and shallow segments. *Filaments* more or less dilated at the base; *anthers* distinct. *Stigma* 2—5-fid. *Caps.* 2—5-celled, bursting laterally, rarely at the extremity. — Name: *campanula*, a little bell, from the usual form of the corolla.

\* *Corolla* campanulate. *Capsule* turbinate, 3—5-celled, opening by lateral clefts below the ~~calyx~~ *calyx*-segments. *Stigma* 3—5-cleft.

1. *C. patula* L. (*spreading B.*); stem angular scabrous, leaves roughish dentato-crenate those of the root obovate-lanceolate subpetiolate those of the stem linear-lanceolate, panicles spreading, flowers long-stalked erect, cal. segments subulate toothed at the base, corolla spreading, capsule erect with the clefts close to the cal.-segments. *E. B.* t. 42.

Pastures and hedges, chiefly confined to the middle and south-eastern counties of England, and even there by no means frequent. ☉. (♂. Sm.) 7—9. — Somewhat allied to *C. rotundifolia*, but much taller, with more branched panicles; larger, more spreading, and more purple flowers; rough stems and leaves, and toothed or serrated calycine segments.

2. *C. \*Rapunculus* L. (*Rampion B.*); stem somewhat angular hairy below, leaves roughish those of the root obovate-oblong stalked crenate upper ones narrow-lanceolate, panicle erect racemose, cal. segments subulate entire, limb of the corolla patent, capsule erect with the clefts close to the cal.-segments. *E. B.* t. 283.

In Kent, Surrey, and Norfolk, in a gravelly soil; and in several of the midland counties as far north as Yorkshire. 4. 7, 8. — Taller (2—3 feet high), more erect, and less paniced than the last. Flowers almost racemed, little spreading at the mouth, more truly campanulate. Calycine segments narrower and entire. The roots constitute *Ramps*, and used to be much cultivated for the table. Now they are principally confined to the kitchen-gardens of the curious. The Hampshire station, often referred to, yields only *C. patula*.

3. *C. \*persicifolia* L. (*Peach-leaved B.*); glabrous, stem rounded few-flowered, root-leaves obovate stalked crenate those of the stem linear-lanceolate subserrate sessile, raceme few-flowered, calycine segments lanceolate entire, corollas spreading, capsule erect with the clefts close to the cal.-segments. *E. B. S.* t. 2773.

Woods near Cullen, Scotland. 4. 7. — Corolla large, spreading. In wild specimens, the flowers are often solitary upon the stem.

4. *C. rotundifolia* L. (*round-leaved B.* or *Hairbell*); glabrous, root-leaves subrotundo-cordate crenate (very soon withering)

lower cauline ones lanceolate, upper linear entire, flowers solitary or racemose drooping, calyx-segments subulate, capsule drooping with the clefts at the base. *E. B.* t. 866.

Dry and hilly pastures, borders of fields, walls, &c., abundant, sometimes varying with white flowers. 4. 7—9. — *Panicle* few-flowered, lax. *Flowers* drooping. Whole plant slender and graceful.

“E'en the slight *Hairbell* raised its head,  
Elastic from her airy tread.”

5. *C. latifolia* (*Giant B.*); stem quite simple rounded, leaves ovate-lanceolate acute scabrous doubly serrate lower ones stalked, flowers racemose, peduncles erect single-flowered, calyx glabrous its segments lanceolate acuminate minutely serrate, fruit drooping opening by clefts at the base. *E. B.* t. 302.

Moist shady woods. In Norfolk, Suffolk, Bedfordshire, and Derbyshire, but ~~rare~~ less unfrequent in the north of England, and very common in woody glens in Scotland. New-Ross, Ireland. 4. 7, 8. — *Stem* 2—3 ft. high. *Corolla* very large, blue, often white in the Scottish woods. This is the finest and most stately of our species.

6. *C. \*rapunculoides* L. (*creeping B.*); stem slightly branched, leaves scabrous unequally crenate serrate, lower ones cordate long-stalked, upper lanceolate sessile, flowers solitary unilateral drooping axillary forming a leafy raceme, segments of the calyx at length reflexed, capsule drooping with the clefts at the base. *E. B.* t. 1369.

Woods and fields, rare. Oxfordshire. On the magnesian limestone between Went-bridge and Darlington, Yorkshire. Blair in Athol, Scotland; and in corn-fields 2 miles N.W. of Kirkcaldy. 4. 7, 8. — *Root* creeping. *Stem* 2 ft. high. *Leaves* gradually narrower in the upper part of the stem, *Flowers* large. *Cul. segments* linear-lanceolate, entire, rough.

7. *C. Trachelium* L. (*Nettle-leaved B.*); hispid, stem angular, leaves coarsely double-serrate, lower ones cordate long-stalked, upper nearly sessile lanceolate acuminate, peduncles axillary few-flowered, calyx-segments lanceolate erect, capsule drooping with the clefts at the base. *E. B.* t. 12.

Woods in England, frequent. 4. 7—9. — *Leaves* much like those of the Nettle, whence its English name. *Flowers* occasionally white in Hampshire.

8. *C. glomerata* L. (*clustered B.*); stem angular simple nearly smooth, leaves scabrous crenate oblong-lanceolate, root-leaves petiolate those of the stem semiamplexicaul, flowers sessile mostly in a terminal cluster, capsule erect with the clefts at the base. *E. B.* t. 90.

In dry, principally chalky and clayey, pastures, England. Hilly pastures in Scotland; but confined chiefly to the east side, between the Frith of Forth and Montrose. 4. 7, 8. — Varying much in

height, from 3 or 4 inches to a foot. *Flowers* rather large, erect. Many slight varieties of this plant are considered to be species by the Continental botanists.

\*\* *Cor. campanulate. Capsule somewhat globose, partly superior, the free portion opening by 3—5 valves. Wahlenbergia.*

9. *C. hederácea* L. (*Ivy-leaved B.*); stem weak filiform, leaves all stalked cordate angulate-dentate glabrous. *E. B. t. 73. Wahlenbergia Reich.*

In moist shady woods, in the south of England, and the west of Scotland; Wales, and Ireland. 4. 7, 8. — A most graceful little plant, growing in lax tufts like *Sibthorpia Europæa*. *Peduncles* long, slender, mostly terminal. *Flowers* half an inch or more in length, at first drooping then erect, pale purplish-blue. *Fruit* an almost globose capsule, three-fourths adhering to the calyx, opening, not at the sides, but in the upper free part, between the persistent segments of the calyx.

\*\*\* *Corolla nearly rotate. Capsule prismatical, elongated, opening by lateral clefts between the cal.-segments. Specularia.*

10. *C. híbrida* L. (*Corn B.*); stem simple or often branched from the base, leaves oblong crenate waved, corolla widely spreading shorter than the calyx-segments, capsule triangular. *E. B. t. 375. Specularia Alph.: DC.*

Corn-fields of a dry and chalky nature, chiefly confined to the middle and southern parts of England. Near Guillon, E. Lothian; Fifeshire. ☉. 6—9.

## 2. PHYTEÚMA Linn. Rampion.

*Cor. rotate, in 5 deep linear segments. Filaments dilated at the base; anthers distinct. Stigma 2—3-cleft. Caps. of 2—3 cells, bursting at the side. (Flowers in dense bracteated spikes or heads.)*—Name: *φυτεύμα* (the same as *φυτρον*), the plant; given *par excellence*, to some medicinal plant by the ancients, but which probably bore little or no resemblance to the present.

1. *P. orbiculáre* L. (*round-headed R.*); head of flowers globose, of fruit oval, radical leaves cordate-ovate petiolate crenate lower cauline ones ovate-oblong, upper as well as the bractæas lanceolate, stigmas 3. *E. B. t. 142.*

Chalky soils, to the south of London; but rare. On the downs of Sussex and Hampshire; in Surrey and Kent. 4. 7, 8. — Stem 1 foot high. *Root-leaves* numerous, but often withering while the stem is yet in perfection, as is the case with those of *Campanula rotundifolia*: cauline ones remote, gradually becoming smaller upwards. *Heads of flowers* of a most beautiful blue colour. The capsules too form a curious oval head, with their persistent calyces, each calyx spreading in a stellated manner.

2, *P. spicátum* L. (*spiked R.*); head of flowers oblong, of



fruit elongated cylindrical, radical leaves cordate-oblong petiolate somewhat doubly serrated, upper ones linear-lanceolate sessile, bractæas linear, stigmas 2. *Borrer in E. B. S. t. 2598.*

Woods, thickets, hedges, and fields recently cleared of wood, in several stations about Mayfield and Waldron, Sussex. Warbleton. 4. 6, 7. — Formerly cultivated, and the root eaten as a salad or boiled. Much taller than the last species. *Spike of flowers* 2—4 inches long, greenish-white. Upper part of the stem almost bare of leaves.

### 3. JASIONE Linn. Sheep's-bit.

*Cor.* rotate; in 4 deep narrow segments. *Anthers* united at their base. *Stigma* club-shaped. *Caps.* 2-celled, opening at the top by minute teeth. (*Flowers collected into a head, within a many-leaved involucre.*) — Name: *ιασωνη*, some plant used in medicine, supposed by some to be a *Convolvulus*, from *ιασμαι*, *ιασμαι*, to heal.

1. *J. montana* L. (*annual S.*, or *Scabious*) ; leaves linear waved hispid, peduncles solitary elongated, root annual or biennial. *E. B. t. 882.*

Dry heathy pastures, in a light gravelly or heathy soil. ☉. or ♂. 6—9. — *Stem* 6—10 inches high, branched. *Flowers* bright blue, in terminal, dense, hemispherical heads. *Cal.* small, superior, 5-toothed.

## ORD. XLVIII. LOBELIACEÆ Juss.

*Calyx-tube* cohering more or less with the ovary, 5-lobed, lobes persistent. *Corolla* mostly irregular, 5-lobed, æstivation somewhat valvular. *Stamens* 5, free from the corolla: *anthers* cohering, 2-celled, usually dissimilar, the two lower ones mucronate or bearded, three upper naked or bearded. *Ovary* 1—2-celled. *Style* 1, glabrous, with a ring of hairs below the bifid or simple stigma. *Fruit* dry, more or less inferior, the free part usually opening between the dissepiments at the apex by 2 valves, or rarely baccate. *Albumen* fleshy: *embryo* straight. — Herbaceous or suffruticose. Leaves alternate, without stipules. — Lactescent and bitter. The genus *Tupa*, and particularly *T. Feuilliei* from Chile, is poisonous.

### 1. LOBELIA Linn. Lobelia.

*Cor.* irregular, 2-lipped, cleft longitudinally on the upper side; upper lip smaller and erect, lower spreading 3-cleft. *Anthers* united, two lower ones bearded at the apex. *Capsule* 2—3-celled, the upper part free 2-valved, loculicidal. — Named in honour of *Matthias Lobel* or *L'Obel*, a Fleming, who settled in England, where he published several learned botanical works.

1. *L. úrens* L. (*acrid* L.); leaves toothed nearly glabrous, radical ones obovate petioled, upper ones lanceolate sessile, raceme terminal bracteated, calyx rough. *E. B.* t. 953.

Heathy ground, very rare, only found near Axminster. *¶*. 8, 9. — Milky, and, as its name implies, highly, acrid. One foot or more high, with distant leaves and axillary branches. Flowers deep-purple, slightly downy externally.

2. *L. Dortmanna* L. (*Water* L.); leaves radical subcylindrical and obtuse of two parallel tubes, stem scarcely leafy, flowers racemed. *E. B.* t. 140.

Lakes in the north and north-west of England, Scotland, and Ireland, especially in the mountainous parts, frequent; often forming a green carpet at the bottom of the water with its densely matted foliage. *¶*. 7, 8. — Root a small, thick, fleshy stock, from which descend many fibres, and sending forth creeping filiform runners. Leaves 2—3 inches long, a little recurved, formed of two parallel tubes or cells. Scape, or almost leafless stem, a foot or more high, according to the depth of the water. Flowers pale blue, drooping; fruit erect.

#### ORD. XLIX. VACCINIACEÆ De Cand.

*Calyx-tube* adnate with the ovary; the limb with from 4—5 more or less distinct lobes or teeth. *Corolla* lobed as the calyx. *Stamens* distinct, free from the corolla, and double the number of its lobes, inserted beneath an epigynous disk. *Anthers* with two cells, opening by 2 pores, and often furnished with 2 awns. *Ovary* 4—5-celled, 1- or many-seeded. *Style* and *stigma* simple. *Berry* with minute seeds. *Albumen* fleshy. — Shrubs; with alternate often coriaceous leaves; chiefly inhabiting mountainous situations or high northern latitudes, slightly tonic and astringent; the fruit esculent.

##### 1. VACCINIUM Linn. Whortleberry.

*Cor.* ovate, campanulate or rotate, 4—5-fid. *Berry* globose, 4-celled, many-seeded. — Name: some say the *bakivbos* of the Greeks, and hence synonymous with *Hyacinthus*, but more probably altered from *baccinia*, denoting a plant with abundance of *baccæ* or berries.

\* *Cor.* ovate or campanulate.

† *Leaves* deciduous. *Anthers* with 2 dorsal awns.

1. *V. Myrtillus* L. (*Bilberry* or *Whortleberry*); peduncles 1-flowered, leaves ovate-serrate glabrous deciduous, stem angular. *E. B.* t. 456.

Woods and heathy places, chiefly in mountainous or alpine districts, abundant. *h.* 4—6. — A small shrub, about 1 foot high. Flowers

drooping, urceolate, almost waxy, greenish with a red tinge. *Anthers* tubular, each cell opening by a pore at the extremity, and having a horn at the back. *Berries* black, glaucous, very agreeable to the taste, and much eaten in the Highlands of Scotland.

2. *V. uliginosum* L. (*Great Bilberry* or *Bog Whortleberry*); peduncles 1-flowered, leaves obovate entire glaucous veined beneath deciduous, stems rounded. *E. B.* t. 581.

In mountain bogs, Cumberland and Westmoreland; more frequent in the Highlands of Scotland, ascending even nearly to the summits of the mountains. *h.* 5, 6. — *Leaves* glaucous, especially beneath. *Cor.* ovate, flesh-coloured, smaller than in the last; *anthers* similar. *Berries* black, agreeable, but inferior in flavour to those of *V. Myrtillus*. — The leaves are added to *Lycopodium alpinum* by the Icelanders, in order to produce a yellow dye for colouring woollens.

†† *Leaves* persistent, evergreen. *Anthers* awnless at the back.

3. *V. Vitis Idæa* L. (*red W.*, *Cow-berry*); racemes terminal drooping, flowers campanulate 4-cleft, leaves evergreen obovate dotted beneath, their margins slightly revolute nearly entire. *E. B.* t. 598.

Dry places on heaths, mountains and in woods, in the north of England, Wales, Scotland, and Ireland. *h.* 5, 6. — A low, somewhat straggling shrub, with leaves resembling those of the *Box*. *owers* pale flesh-coloured, open at the mouth, and with deeper and more spreading segments than the two preceding species.

\*\* *Cor.* rotate with reflexed segments. *Leaves* persistent, evergreen. *Anthers* awnless at the back.

4. *V. Oxycoccus* L. (*Marsh W.*, *Cranberry*); peduncles terminal single-flowered, leaves ovate evergreen glaucous beneath, their margins revolute and entire, cor. 4-partite revolute, stem filiform. *E. B.* t. 319. *Oxycoccus palustris* Rich.

Peat-bogs, especially among *Sphagnum*, in various parts of England, Scotland, and Ireland. *h.* 6. — *Stems* straggling, wiry, 8—10 inches long. *Leaves* small. *Flowers* of a bright rose-colour. *Cor.* deeply divided, the segments singularly revolute, on which account this species has been by some botanists removed from *Vaccinium*. The fruit is highly agreeable, making the best of tarts: at Longtown, on the borders of Cumberland, it forms no inconsiderable article of trade.

(*V. macrocarpum* Ait. is said to have been found in Loughton Bog, Mould, Flintshire; but either this is a mistake, or it must have been planted there, as it is entirely a N. American species.)



## SUB-CLASS III. COROLLIFLORÆ. (ORD. L.—LXVIII.)

*Corolla monopetalous, hypogynous (inserted upon the receptacle, at the base of the ovary, which is thus free, not adnate with the calyx).*

## CONSPÉCTUS OF THE ORDERS.

A. *Stamens free from the corolla, distinct.*

- [36. CRASSULACEÆ. Styles several. Ovary of distinct pieces or carpels.]  
 50. ERICACEÆ. Style 1. Cor. petaloid: petals firmly cohering. Stam. 8—10. Seed-coat close to the nucleus. Plants shrubby.  
 51. PYROLACEÆ. Style 1. Cor. petaloid: petals very slightly cohering at the base, easily separated. Stam. 10. Seed-coat chaffy. Plants herbaceous.  
 68. PLANTAGINACEÆ. Style 1. Cor. membranaceous. Stamens 4. (Flowers monœcious.)

B. *Stamens inserted upon the corolla, distinct.*

\* *Style basilar. Ovary 4-partite. Albumen 0, or in small quantity.*

59. BORAGINACEÆ. Flowers usually regular. Stamens 5. Leaves alternate.  
 63. LABIATÆ. Flowers usually irregular. Stamens 2—4. Leaves opposite.

\*\* *Cor. scarious. Style terminal. Ovary entire.*

68. PLANTAGINACEÆ. Cor. tubular; limb equal, 4-partite. Stamens 4, very long.

\*\*\* *Cor. coloured (petaloid). Style terminal. Ovary entire, 1-celled.*

67. PLUMBAGINACEÆ. Calyx tubular. Styles 5. Ovule solitary.  
 [33. PORTULACACEÆ. Sepals 2, distinct. Styles 3. Ovules 3.]  
 66. PRIMULACEÆ. Cor. regular. Stamens opposite the lobes of the cor. and as many, equal. Style 1.  
 65. LENTIBULARIACEÆ. Cor. irregular. Stam. 2. Style 1. Ovary with a free central placenta.  
 62. SCROPHULARIACEÆ. Cor. nearly regular. Stam. 4, fewer than the lobes of the cor., and alternating. Style 1. Placentas axile.  
 61. OROBANCHACEÆ. Cor. irregular. Stam. 4, didynamous. Style 1. Placentas parietal.  
 56. GENTIANACEÆ. Cor. regular. Stam. alternate with the lobes of the cor., and as many. Style 1—2. Placentas parietal. Seeds very numerous.  
 58. CONVULVULACEÆ. Cor. regular. Stam. alternate with the lobes of the cor., and as many. Style 1. Placentas basilar. Seeds very few.

\*\*\*\* *Cor. coloured. Stam. distinct. Style terminal. Ovary entire or slightly 2-lobed, with two or more cells.*

† *Ovules solitary in each cell, or in pairs and collateral.*

58. CONVULVULACEÆ. Cor. regular, 4—5-lobed. Stam. 4—5. Style or styles evident. Leaves alternate or none.

53. **AQUIFOLIACEÆ.** Cor. regular, 4—6-partite, Stam. 4—6. Stigmas 2.
54. **OLEACEÆ.** Cor. regular, valvate in æstivation. Stam. 2. Leaves opposite.
55. **VERBENACEÆ.** Cor. slightly irregular, with a cylindrical tube and 5-cleft limb, imbricated in æstivation. Stam. 4. Leaves opposite.
- †† *Ovules in pairs in each cell and superposed, or more than 2.*
56. **POLEMONIACEÆ.** Cor. regular. Stigmas 3. Ovary and capsule 3-celled.
57. **APOCYNACEÆ.** Cor. regular, twisted in æstivation. Stam. as many as the lobes of the cor. Style with a ring below the stigma. Stigma 1. Fruit of 2 follicles.
58. **GENTIANACEÆ.** Cor. regular, twisted in æstivation. Stam. as many as the lobes of the cor. Style without a ring below the stigma. Stigmas 1—2. Fruit imperfectly 2-celled, not follicular. Leaves opposite.
59. **SOLANACEÆ.** Cor. plaited in æstivation, with 5 lobes and stamens. Fruit 2- (or spuriously 4-) celled. Embryo curved. Leaves alternate. Flowers extra-axillary.
60. **SCROPHULARIACEÆ.** Cor. imbricated in æstivation. Stamens usually fewer than the lobes of the cor. Fruit 2-celled. Embryo straight. Flowers axillary.

[C. Stamens inserted upon the corolla, 8, diadelphous.

11. **POLYGALACEÆ.** Cor. irregular, coloured. Style 1, terminal. Ovules solitary in each cell.]

## A. STAMENS FREE FROM THE COROLLA. (ORD. L.—LII.)

### ORD. L. ERICACEÆ.

*Calyx* of 4 or 5 divisions, persistent. *Corolla* of 4 or 5 divisions, regular or irregular, almost hypogynous, marcescent or deciduous. *Stam.* 8—10. *Anthers* 2-celled, the cells separating at the apex or the base, opening by pores or rarely by a longitudinal fissure, often appendaged. *Ovary* seated upon an hypogynous disk, with 4 or more cells. *Style* 1. *Stigma* 1, often lobed. *Fruit* a capsule, many-celled, with an axile *placenta*, many-seeded. *Seeds* with the outer coat of the same form as and close-pressed to the nucleus, very rarely chaffy. *Albumen* fleshy.—Shrubs, with opposite or whorled, mostly evergreen and rigid leaves, without stipules.—Many are astringent and diuretic, some poisonous, as *Rhododendron* and *Kalmia*.

\* *Corolla marcescent. Fruit dry, capsular.*

1. **ERICA.** Calyx simple. Capsule loculicidal, dissepiments adhering to the valves.
2. **CALLUNA.** Calyx double (surrounded by 4 coloured bractæas similar to the calyx). Caps. septicidal, dissepiments detached from the valves.

\*\* *Corolla deciduous. Fruit dry, capsular.*

3. MENZIESIA. Cor. ventricose. Stam. 8—10. Caps. 4—5-celled, septi-  
cidal; valves entire.
4. AZALEA. Corolla campanulate. Stam. 5. Caps. 2—3-celled, septi-  
cidal; valves bifid
5. ANDROMEDA. Cor. ovate or campanulate. Stam. 10. Caps. loculicidal.

\*\*\* *Cor. deciduous. Fruit fleshy, indehiscent.*

6. ARBUTUS. Cells of berry many-seeded.
7. ARCTOSTAPHYLOS. Cells of berry 1-seeded.

### 1. ERICA Linn. Heath.

*Cal.* of 4 leaves. *Cor.* campanulate or ovate, often ventri-  
cose, marcescent. *Capsule* 4-celled, 4-valved, loculicidal, dis-  
sepiments adhering to the middle of the valves. — Named from  
*ερεικα*, to *break*, because it was formerly supposed to have the  
power of destroying calculi in the bladder.

\* *Mouth of the corolla oblique. Anthers included, or nearly so.*

1. *E. ciliaris* L. (*ciliated H.*); anthers without awns bifid  
included, corolla ovate inflated, leaves ovate 4 in a whorl ciliato-  
glandulose, flowers in terminal unilateral racemes, ovary gla-  
brous. *E. B. S. t.* 2618.

Near Truro and Penryn, frequent, and on the north coast of Corn-  
wall; near Corfe Castle, Dorset; near Clifton, Galway, Ireland. *h.*  
6, 7. — The flowers are as large as those of *Menziesia caerulea*, and  
more highly coloured; while the leaves are elegantly fringed with  
hairs, and each hair is tipped with a gland. Growing along with  
this and *E. Tetralix*, Mr. H. Watson finds at Truro a hybrid between  
them, having sometimes the *cor.* and the *racemes* of the present species,  
with the leaves, pubescent ovary, and awned anthers of the next, but  
varying in these respects.

\*\* *Mouth of corolla straight. Anthers included, or nearly so, awned at  
the base.*

2. *E. Tetralix* L. (*Cross-leaved H.*); anthers with two acute  
awns at the base included, corolla ovate long as the style, leaves  
4 in a whorl linear revolute at the margin ciliated, flowers  
umbellate-capitate, pedicels hoary, ovary pubescent. *E. B.*  
*t.* 1014.

Heaths and moory ground, abundant. *h.* 7, 8. — Flowers rose-  
coloured, sometimes white, drooping. They have been found cleft  
into several divisions, and with the stamens turned into petaloid seg-  
ments. The species varies much as to the number of ciliæ on the  
leaves and calyx, and occasionally loses them entirely.

3. *E. Mackayi* Hook. (*Mackay's H.*); anthers with 2 acute  
awns at the base included, corolla ovate a little shorter than  
the style, leaves 4 in a whorl ovate ciliated glabrous above

almost white beneath, flowers umbellate-capitate, pedicels nearly glabrous, ovary glabrous. *E. B. S. t.* 2900.

Between Roundstone and Clifden, Cunnamara, Ireland. *h.* 8, 9. — This, which is sometimes called *E. Mackaiana*, was first found in Ireland by Mr. Wm. MacCalla and Mr. Ogilby, and distinguished by Dr. Mackay, and in the same year it was discovered on the Sierra del Peral, in Asturia, by M. Durieu. The broad, almost exactly ovate, leaves, with a great proportion of nearly white surface beneath, would seem, at first sight, to distinguish this specifically from the preceding; to which may be added, according to Mr. Babington, that the upper surface of the leaves and their midrib beneath are always glabrous, while these parts are downy in *E. Tetralix*. Perhaps however it may prove, by cultivation, to be only a more glabrous form, with larger foliage.

4. *E. cinérea* L. (*fine-leaved H.*); anthers with 2 serrated appendages at the base included, style a little exserted, corolla ovate, leaves ternate linear keeled acute glabrous shining, flowers in dense whorled racemes, ovary glabrous. *E. B. t.* 1015.

Heaths, abundant. *h.* 7—9. — Flowers drooping, reddish-purple. Leaves usually with fascicles of small leaves in their axils. The plant is used for various economical purposes: its flowers are sometimes white.

(*E. stricta* Andr. is mentioned by Mr. Bentham in De Candolle's *Prodromus* as a native of the north of Ireland, on the authority of a specimen given to Dr. Lloyd of Leamington, which was, however, afterwards ascertained to have been obtained from a garden.)

\*\*\* Mouth of the corolla straight. Anthers protruded, bipartite, awnless.

5. *E. vagans* L. (*Cornish H.*); anthers without awns deeply bifid and as well as the style exserted, corolla campanulate, leaves 3—4 in a whorl, flowers axillary crowded, ovary glabrous. *E. B. t.* 3. *E. multiflora* Hud. (not L.)

On heaths in Cornwall, abundant. Islet on the coast of Waterford, near Tramore, Ireland. *h.* 7, 8. — Well distinguished from all our British *Ericæ* by its campanulate, not ovate, corolla.

6. *E. Mediterrænea* L. (*Mediterranean H.*); anthers without awns deeply bifid and as well as the style exserted, corolla narrow urceolate, bractæ above the middle of the peduncle, calyx coloured, flowers in leafy racemes, leaves 4 in a whorl linear glabrous flat above convex with a central furrow beneath, ovary glabrous. —  $\beta$ . flowering branches and style shorter. Hook. in *E. B. S. t.* 2774.

$\beta$ . Mountain-bogs in the west of Mayo and Galway, Ireland. On Urrisbeg Mountain, Cunnamara; Curraan, Achil; Burrischoole Lake, &c. *h.* 4. — The Irish plant seems intermediate between the *E. Mediterrænea* of Bot. Mag. and *E. carnea*: the stem is sometimes 2—5 ft. high, with numerous upright rigid branches, as in

*E. Mediterranea*, sometimes only 4—8 inches high with spreading branches. Mr. Benthams, indeed, unites them all under *E. carnea*.

## 2. CALLUNA Salisb. Ling.

*Cal.* of 4 coloured leaves, concealing the *cor.*, accompanied by 4 *bracteas*, resembling an outer calyx. *Cor.* campanulate, marcescent. *Stum.* 8. *Caps.* 4-celled, 4-valved, septicidal and septifragal (*valves* opening at the dissepiments which separate from them and adhere to the axis of the fruit). — Named from *καλλυνω*, to *cleanse* or *adorn*, and hence peculiarly applicable, as Sir J. E. Smith observes, to this plant, whether we consider the beauty of its flowers, or the circumstance of brooms being made of its twigs.

1. *C. vulgaris* Salisb. (*common L.*). *Erica L.*: *E. B.* t. 1013.

Heaths and moors, common; sometimes with white fl. *h.* 6—8. — A low, much-branching, tufted *shrub*. *Leaves* small, opposite, with two small decurrent spurs at the base, more or less pubescent, and even hairy in *β.* of *Sm.* (the *E. ciliaris*. Huds. not Linn.), closely imbricated in 4 rows. *Flowers* small, reddish, drooping, nearly sessile, ovate. A plant much employed for brooms and for fuel. It makes excellent edging to garden-plots, and bears clipping as well as *Bor.*

## 3. MENZIESIA Sm. Menziesia.<sup>1</sup>

*Cal.* cleft to the base into 4—5 deep segments, or 4-lobed. *Cor.* ventricose, deciduous. *Stam.* 8—10. *Capsule* 4—5-celled, septicidal (the dissepiments formed by the inflexed margins of the entire valves, and opening between these dissepiments). — Name: “*Nomen dedi*,” says the learned founder of this genus, “in honorem Archibaldi Menzies Scotici, peregrinatoris et botanici indefessi, priscæ fidei ac urbanitatis viri.”

1. *M. cærúlea* Sm. (*Scottish M.*); leaves scattered numerous linear toothed, flower-stalks terminal aggregate simple, flowers 5-cleft decandrous. *E. B.* t. 2469. *Phyllodoce taxifolia* Sal.

Heathy moor on the “Sow of Athol,” at Dalnaspidal, Perthshire. *h.* 6, 7. — A small *shrub*; *stems* branched, woody and naked below. *Peduncles* 2 inches long, glandular, reddish. *Flowers* large, beautiful, purple-blue. *Cor.* urceolate. — This plant is far more common in North America than in Scotland. It scarcely yields in beauty to the following species.

<sup>1</sup> This genus has lately been divided into three: — 1. *Phyllodoce* Sal. *Cal.* deeply 5-cleft. Filaments longer than the anthers. Stigma peltate, with 5 tubercles. Seeds oblong compressed. — 2. *Dabeocia* Don. *Cal.* deeply 4-cleft. Filaments shorter than anthers. Stigma truncated. Seeds ovate. — 3. *Menziesia* Sm. *Calyx* 4-lobed. Filaments longer than the anthers. Stigma obtuse. Seeds scabiform. The two first are evergreen: the last has deciduous leaves, and is a native only of America; it is no doubt the original species of the genus, but Smith afterwards changed the character so as to exclude it, and include the European ones.



2. *M. polifolia* Juss. (*Irish M.*, or *St. Dabeoc's Heath*); leaves ovate the margins revolute white and downy beneath, flowers 4-cleft octandrous in terminal leafy racemes. *Erica Dabeoci* L.: *E. B. t. 35. Dabeocia polifolia* Don.

Mountainous heaths in Ireland. Croagh Patrick, county Mayo. Abundant in Cunnamara. Sometimes with pure white fl. *h.* 6—8.

#### 4. AZÁLEA Linn. Azalea.

*Cal.* 5-partite. *Cor.* shortly campanulate, regular, deciduous. *Stam.* 5, straight, inserted at the base of the *cor.* *Anthers* bursting longitudinally. *Caps.* 2—3-valved, 2—3-celled; dissepiment formed by the inflexed margins of the bifid valves. *Seeds* attached to a central, at length free, receptacle. — Named from *αζαλεος*, *parched, arid*; because in such places the plant grows.

1. *A. procumbens* L. (*trailing Azalea*). *E. B. t. 865. Chamædion* Link. *Loiseleuria Desvaux.*

Dry moory ground, on most of the Scottish Highland mountains, among grass and moss; especially abundant in the north, and nowhere perhaps more plentiful than on the Cairngorm range, where it forms large dark green patches, *h.* 5, 6. — A low *shrub*, with very woody tortuous *stems*, and crowded leafy *branches*. This is the only species, among all those often placed in the genus, to which the name *Azalea* is applicable.

#### 5. ANDRÓMEDA Linn. Andromeda.

*Cal.* deeply 5-cleft. *Cor.* ovate or campanulate, deciduous. *Stam.* 10. *Anthers* with awns. *Caps.* superior, 4—5-celled, loculicidal, the dissepiments from the middle of the valves. — Named in allusion to the fable of *Andromeda*, who was chained to a rock, and exposed to the attack of a sea-monster; so does this beautiful tribe of plants grow in dreary and northern wastes, feigned to be the abode of præternatural beings.

1. *A. polifolia* L. (*Marsh A.*); leaves alternate lanceolate their margins revolute glaucous beneath, flowers in short terminal racemes. *E. B. t. 713.*

Peat-bogs, Larlingford, Norfolk. The north of England, Lowlands of Scotland, and in the Queen's-county and Kerry, Ireland. *h.* 5—9. — A small evergreen *shrub*, with beautiful oval or urceolate, rose-coloured, drooping *flowers*, a good deal concealed among the terminal *leaves*.

#### 6. A'EBUTUS Linn. Strawberry-tree.

*Cal.* deeply 5-cleft. *Cor.* ovate, deciduous. *Stam.* 10. *Fruit* fleshy, usually warted, 5-celled; cells many-seeded. — Named, according to Théis, from *ar*, *rough*, or *austere*, and *boise*, a *bush*, in Celtic.

1. *A. Unedo* L. (*austere* S.); stem arboreous, leaves elliptic-lanceolate serrated, panicles terminal, berries tubercled. *E. B.* t. 2377.

About the Lakes of Killarney, in woods at Mucruss and at Glengariff near Bantry, Ireland, where it adds greatly to the charms of the scenery. *h.* 9, 10.—The fruit ripens the following summer. Apparently truly wild in the south of Ireland; though some are of opinion that it has been introduced by the Monks of Mucruss Abbey. The young leaves are clothed with glandular hairs. The flowers are large, pale greenish-white. Fruit red.

# 7. *ARCTOSTAPHYLOS* Adans. Bear-berry.

*Cal.* deeply 5-cleft. *Cor.* ovate, deciduous. *Stam.* 10. Fruit fleshy, smooth, 5-celled; cells 1-seeded.—Name from *αρκτος*, a bear, and *σταφυλη*, a grape, in allusion to the common name of the fruit.

1. *A. alpina* Spreng. (*black* B.); stem procumbent, leaves wrinkled serrated marcescent, racemes terminal. *Arbutus* L.: *E. B.* t. 2030.

Dry barren grounds, on many of the Highland mountains. Ben Nevis, near the lake; and more frequent on the northern mountains and in Sutherland. Hoy hill, Orkney. *h.* 5.—A trailing shrub, with obovate, marcescent leaves which taper down into a footstalk, and assume, in autumn, a fine red colour. There are a few hairs on the leaf-stalks, and ciliated bractes at the base of the flower-stalks. Corollas urceolate, very pale rose-colour, almost white. Berry black.

2. *A. Uva Ursi* Spreng. (*red* B.); stems procumbent, leaves obovate entire evergreen, racemes terminal. *Arbutus* L.: *E. B.* t. 714.

North of England and Ireland; especially abundant in the Highlands and Western Isles of Scotland, growing in dry heathy and rocky places. *h.* 5, 6.—Stems very strong and trailing; leaves obovate, stiff, rigid, glabrous, their margins revolute. Flowers in small crowded terminal racemes, of a beautiful rose-colour. Berry small, red, mealy, austere, yielding excellent food for the moor-fowl.

# ORD. LI. PYROLACEÆ Lindl.

*Calyx* 5-partite, persistent. *Corolla* regular, deciduous. *Stamens* 10, placed in pairs opposite the petals: *anthers* 2-celled, inverted, opening by pores. *Ovary* without a conspicuous hypogynous disk, 5-celled, many-seeded. *Style* single. *Stigma* rayed or orbicular, generally lobed. *Capsule* 5-celled, 5-valved, loculicidal. *Seeds* chaffy, numerous. *Albumen* fleshy, with the minute embryo at its base.—Herbaceous or somewhat shrubby. *Chimaphila* of North America is a powerful diuretic.

1. *MONESSES*. Cor. 5-partite. Stigma 5-partite..
2. *PYROLA*. Petals 5. Stigma 5-lobed.

### 1. *MONESSES* Sal. *Moneses*.

*Petals* slightly connected at the base. *Filaments* subulate; *anthers* with two tubular pores. *Stigma* 5-parted. Margins of the *valves* of the *capsule* without any web.—Name from *μονος*, one, or alone, on account of the solitary flowers, and combined petals.

1. *M. grandiflora* Sal. (*large-flowered M.*). *Pyrola uniflora* L.: *E. B.* t. 146.

Woods in Scotland, rare. Fir-wood near Brodie House, Forres. Woods at Seone. Coul, Ross-shire. In the Oak-wood, Knock of Alves, near Elgin. 4. 7.—*Stem* scarcely any, bearing a few orbicular, petiolated and obscurely serrated leaves, and a single peduncle, with one large, nearly white, very fragrant flower. *Style* short, straight. *Stigma* large, with 5 erect rays.

### 2. *PYROLA* Linn. *Winter-green*.

*Petals* 5, distinct. *Filaments* subulate; *anther-cells* usually truncate and opening by a pore at the base, rarely with two tubular pores. *Stigma* 5-lobed. Margins of the *valves* of the *capsule* connected with a web.—Named from *Pyrus*, a pear; from a fancied resemblance in its flowers to those of a *Pear-tree*.

1. *P. secunda* L. (*serrated W.*); flowers racemed all leaning one way, leaves ovate serrated. *E. B.* t. 517.

Rare in the north of England; near Keswick, Cumberland. Not unfrequent in fir-woods in Scotland, especially in the Highlands. 4. 7.—*Stems* rather straggling, branched. *Peduncles* 4—5 inches high, with several oval scales or bractes. *Flowers* small, greenish-white. *Petals* erect. *Style* much protruded. *Stigma* 5-lobed.

2. *P. rotundifolia* L. (*round-leaved W.*); flowers drooping racemed, leaves obovate-rotundate slightly crenate, style bent down curved upwards at the extremity, much longer than the ascending stamens. *E. B.* t. 213.—*β. bracteata*; leaves smaller, scape scaly throughout its whole length. *P. maritima* Ken. in *Phytol.* ii. p. 727.

Moist woods and bushy places, rare. Bradwell and Middleton, Suffolk; Larlingford, Norfolk; Hawthorndean, Durham; near Halnaby, and in Castle-Eden Dene, Yorkshire. Guernsey, among tall reeds near the sea. Gonnacha Wood, Glenclova, and Sidlaw Hills, Forfarshire; Auchindenny woods near Edinburgh. Several other places in Scotland and England have been assigned as stations of this plant, which is so often confounded with the two following species, that we cannot quote them with equal certainty. *β.* Sands on the Lancashire coast, Mr. Kenyon. 4. 7—9.—The largest of the *Pyrola*, with white, spreading flowers: well distinguished by

the direction and relative length of its *stamens* and *style*. The latter is more than twice as long as the fully formed *capsule*, and is singularly curved. *Stigma* with 5 erect points. —  $\beta$ . in the foliage and general aspect of the flowers very much resembles *P. chlorantha*, but the anthers have not the long tubular termination, and there are many scales or bracteas all the way up at short distances. Can it be *P. rotundifolia*  $\beta$ . *arenaria*, of Koch? It does not, indeed, notice the scaly scape.

3. *P. média* Swartz (*intermediate* W.); leaves ovate-rotundate crenate, stamens erect much shorter than the straight or slightly decurved style, stigma with 5 erect points. *E. B.* t. 1945.

Woods, principally in the north; Keswick, Cumberland; Rugley wood, Northumberland; Durham; York; Worcestershire; St. Leonard's Forest, Sussex; also said to grow in Oxford, Bucks, Warwick, and Lancashire. Not very general in Scotland. County of Antrim, &c. Ireland.  $\gamma$ . 7, 8. — *Style* protruded beyond the flower, straight.

4. *P. minor* L. (*lesser Winter-green*); leaves ovate-rotundate crenate, stamens erect as long as the very short straight style which is included within the flower, stigma large with 5 divergent rays. *E. B.* t. 158 (not good); *Hook. in Fl. Lond.* t. 154. *P. rosea* *E. B.* t. 2543.

Woods in the north of England and Scotland; frequent in the Western Highlands and Hebrides.  $\gamma$ . 6, 7. — Smaller than the last, essentially distinguished from it, and at once characterized by the shortness of its *style* and large radiated *stigma*, quite included within the concave *corolla*.

## ORD. LII. MONOTROPACEÆ Nutt.

*Cal.* 5-partite or 5-sepaled, persistent. *Cor.* regular, gamopetalous, ovate or campanulate, or wanting. *Stamens* 8—10, sometimes alternating with as many recurved glands; *anthers* sometimes opening transversely, sometimes parallel-celled with bristles at the base, never opening by pores at the base or apex. *Ovary* without a conspicuous entire hypogynous disk, 4—5-celled, many-seeded. *Style* single. *Stigma* discoid, somewhat margined. *Capsule* 5-celled, 5-valved, loculicidal. *Seeds* numerous, chaffy or winged at one end. *Embryo* minute, in the apex of the fleshy *albumen*. — Herbaceous, growing among the roots of Pines and other trees; stems brown or almost colourless, leafless, but covered with scales.

### 1. MONÓTROPA Linn. Bird's Nest.

*Perianth* (*corolla* DC.) of 4—5 leaves, cucullate at the base, with or without as many external alternating scales or bracteas (*calyx* DC.). *Anthers* 1-celled, 2-lipped. *Seeds* chaffy. — Named from *μονος*, one, and *τρενω*, to turn; the flowers all pointing one way.

1. *M. Hypopitys* L. (*yellow B.*); flowers racemose glabrous externally, lateral ones with 8 stamens, terminal one with 10, leaves of the perianth with as many glabrous alternating external scales. *E. B.* t. 69.— $\alpha$ . filaments ovary, style and inside of perianth glabrous.— $\beta$ . filaments, ovary, style, and inside of perianth hairy.

Beech and fir woods, where the soil is dry; but not common either in England or Scotland. In Sussex, occurring in *rings* several feet in diameter. Counties of Dublin and Louth, Ireland. 4. 6, 7. — *Root* parasitic? *Stem* stout, erect, 6—9 inches high, simple or slightly branched, instead of *leaves* having numerous ovate scattered *scales*, of the same dingy yellow hue as the stem. *Raceme* terminal, a continuation of the stem, at first drooping, then erect. *Flowers* on short scaly or bracteated *pedicels*, large, of the same colour as the rest of the plant. *Stamens* alternately smaller. *Seeds* very minute, rarely perfect; the outer coat loose, reticulated, and much longer than the nucleus. This and the other species, with racemose flowers, and external scales to the perianth, form the genus *Hypopitys* of authors; *Monotropa* containing those only having single flowers without external scales, all from America; but the name is not so applicable to them as to our own species.

## B. STAMENS INSERTED UPON THE COROLLA. (ORD. LIII.—LXVIII.)

### ORD. LIII. AQUIFOLIACEÆ *De Cund.*

*Cal.* of 4—6 imbricated lobes. *Corolla* 4—6-lobed, imbricated in æstivation. *Stamens* 4—6, alternate with the segments of the corolla. *Ovary* with from 2—6 or more cells. *Ovules* solitary, pendulous from a cup-shaped *seed-stalk*. *Stigmas* several or lobed, nearly sessile. *Fruit* fleshy, with from 2—6 or more stony 1-seeded *nuts*. *Albumen* fleshy. — Trees or shrubs. Leaves *coriaceous*. Flowers *small*, *axillary*. — The Bark and Berries are tonic and astringent. The famous *Paraguay Tea* of South America is a species of *Holly*, *Ilex Paraguensis*.

#### 1. *Ilex* Linn. Holly.

*Cal.* 4—5-toothed. *Cor.* rotate, 4—5-cleft. *Stigmas* 4, sessile. *Berry* spherical, including 4 *nuts*. (Some flowers destitute of pistil.) — Name supposed to be the same as *Ulex*, which see; or perhaps a corruption of *Ilex*, *enticing* or *alluring*, in allusion either to the birdlime made of the bark, or to the berries.

1. *I. Aquifolium* L. (*common H.*); leaves ovate acute shining, waved with spinous teeth, peduncles axillary short many-flowered, flowers subumbellate. *E. B.* t. 496.

Frequent in hedges and woods, especially in a light or gravelly

soil. *h.* 5, 6.—A small evergreen tree of great beauty, with smooth greyish bark. Leaves alternate, deep shining green, very rigid, the upper ones quite entire, the lower ones generally edged with strong sharp spines, a difference in the foliage which has not escaped the notice of poets. Berries bright scarlet, sometimes yellow.—Excellent for fences, as it bears clipping. The wood is hard and white, and presents a beautiful surface, wherefore it is much employed for turnery-work, for drawing upon, for knife-handles, &c. Of the bark birdlime is made. With the leaves and berries our houses and churches are adorned at Christmas, a relic probably of Druidism.

### ORD. LIV. OLEACEÆ *R. Brown.*<sup>1</sup>

*Calyx* divided, toothed, persistent, sometimes 0. *Corolla* 4-cleft, valvate in æstivation, occasionally 0. *Stamens* 2. *Ovary* without any hypogynous disk, 2-celled, cells 2-seeded: *ovules* collateral, pendulous. *Style* 1, or 0: *stigmas* 1 or 2. *Fruit* a berry, drupe, or capsule, separable in two. *Seeds* with or without *albumen*.—Trees or shrubs. Leaves *opposite*, without stipules, *simple* or *compound*.—Olive oil is the expressed juice of the pericarp (not of the seed) of *Olea Europea*. *Manna* is the concrete juice of *Fraxinus rotundifolia* and other species of *Ash*. The *Jasmines* yield a deliciously fragrant oil, and belong to the very closely allied order of *Jasminaceæ*, chiefly distinguished by the erect ovules, unsymmetrical flowers and corolla imbricated in æstivation.

1. *LIGUSTRUM*. Fruit fleshy.

2. *FRAXINUS*. Fruit dry, winged at the extremity.

#### 1. *LIGUSTRUM* *Linn.* Privet.

*Cal.* 4-cleft. *Cor.* 4-cleft. *Berry* 2-celled, with the cells 1—2-seeded.—Named from *ligo*, to bind; on account of the use sometimes made of its long and pliant branches.

1. *L. vulgäre* *L.* (*Privet*); leaves elliptic-lanceolate, panicle compact. *E. B.* t. 764.

Thickets, and more frequently in hedges. *h.* 6, 7.—A bush, with opposite evergreen leaves, frequently used for fences, as the plant bears clipping. Flowers small, white. Berries black, globose.

#### 2. *FRAXINUS* *Linn.* Ash.

*Cal.* 0, or 4-cleft. *Cor.* 0, or of 4 petals. *Fruit* dry, indehiscent, 2-celled, 2-seeded, compressed and foliaceous at the extremity (a *Samara*). *Seeds* solitary. (Flowers sometimes without stamens.)—Named from *φραξις*, a separation, in allusion to the facility with which the wood may be split.

1. *F. excelsior* L. (common *A.*); leaves pinnated, leaflets ovato-lanceolate acuminate serrated, flowers without either calyx or corolla. *E. B. t.* 1692.—*β. heterophylla* (simple-leaved *Ash*); leaves simple and pinnated. *F. heterophylla* Vahl: *E. B. t.* 2476.

Woods and hedges, throughout the country.—*β.* Rare in England; Devonshire. *h.* 4, 5. — One of the noblest of our trees, remarkable in old individuals for the curving upwards of the extremities of the lower pendent branches. There are many varieties. The *F. heterophylla* may be considered a sort of monstrosity, often with the leaflets united so as to form one single leaf. — The flowers are very simple, and appear before the leaves. There is no calyx or corolla. The pistil and stamens, often one of each, are sometimes separate, and rise at once from the extremity of the flower-stalk. The wood is valuable for many purposes, especially for implements of husbandry, the young copse-wood for making hurdles, and the older for hop-poles.

## ORD. LVI. APOCYNACEÆ.

*Calyx* of 5 persistent divisions. *Corolla* regular, 5-lobed, deciduous; *activation* twisted. *Stamens* 5. *Anthers* 2-celled. *Ovaries* 2, 1—2-celled, many-seeded. *Styles* 2—1. *Stigma* 1, capitate, contracted in the middle (like an hour-glass). *Fruit* a follicle, capsule, drupe, or berry. *Seed* albuminose. — Trees or shrubs, often milky; leaves opposite, without stipules. — An Order almost intermediate between *Gentianaceæ* and *Rubiaceæ*, containing acrid and powerful principles. The famous *Tanghin Poison* of Madagascar (see *Botanical Miscellany*, vol. iii. p. 110, and *Botanical Magazine*, tab. 2968) is the seed of *Tanghinia venenifera*. The root of the *Oleander* is poisonous, while the nearly allied *Tabernæmontana*, or *Hya-Hya* of British Guiana, is the milk-tree of that country, and yields a nutritive fluid like cream. *Urceola elastica* affords Caoutchouc. *Vinca minor* is bitter and astringent. *Strychnine* is afforded by *Strychnos Nux-vomica*, and the *Wourali* poison by *S. toxifera*, belonging to the allied order *Loganiaceæ*, chiefly distinguished by the simple stigmas.

### 1. *VINCA* Linn. Periwinkle.

*Cal.* 5-partite. *Cor.* salver-shaped, the segments oblique. *Follicles* 2, erect. *Seeds* naked (destitute of seed-down). — Name: supposed from *vincio*, to bind, which the trailing stems do to those plants which grow in its neighbourhood.

1. *V. minor* L. (lesser *P.*); stem procumbent, leaves oblong-lanceolate their margins as well as the small lanceolate teeth of the calyx glabrous. *E. B. t.* 917.

Hedges and banks in woods. Devon, Hants, and perhaps most of

the southern counties. 4. 4—6. — Wood of the shoots very tough ; not so in the following species.

2. V. \**mājor* L. (*greater P.*) ; stem suberect, leaves ovate-cordate their margins as well as those of the elongated subulate segments of the calyx ciliated. *E. B.* t. 514.

Woods and thickets. 4. 4, 5. — Twice the size of the former in all its parts. *Corolla* usually purple in both, but varying in intensity. The *anthers*, *stigma*, and *fruit* (a *follicle*) of this genus are highly curious.

### ORD. LVI. GENTIANACEÆ *Juss.*

*Calyx* divided, persistent. *Corolla* usually regular and persistent, the limb generally with an imbricated and twisted rarely with an induplicate æstivation, 4- mostly 5-, 6-, 8-, or 10-lobed. *Stamens* as many as lobes of the corolla. *Ovary* 1—2-celled, many-seeded. *Styles* 1 or 2. *Stigmas* 1—2. *Capsule* (or *berry*) generally 2-valved ; the margins of the valves turned upwards and bearing the *seeds*, where there is one cell ; in the -celled genera the margins meet in the axis. *Albumen* fleshy. — *Mostly* herbaceous, *generally* glabrous plants, *with* opposite (rarely alternate) leaves and no stipules, *eminently* bitter and stomachic. — *Gentiana lutea* is the bitter *Gentian*, and affords a spirit much used in Switzerland and well known under the name of *Gentian-Wasser* : *Swertia* (or *Ophelia*) *Chirayta* is a famous East-Indian stomachic.

A. *Leaves opposite. Corolla twisted in æstivation.*

\* *Style deciduous.*

4. CHLORA. Cor. rotate. Stamens 8.
1. CICENDIA. Cor. funnel-shaped. Stam. 4. Anth. straight. Stigma 1, entire.
2. ERYTHRÆA. Cor. funnel-shaped. Stam. 5. Anth. twisted. Stigmas 2.

\*\* *Style persistent.*

8. GENTIANA. Cor. without nectariferous pores. Cal. 4—5-cleft.
- 3a. SWERTIA. Cor. rotate, with nectariferous pores. Cal. 4—5-partite.

B. *Leaves alternate. Corolla induplicate in æstivation.*

5. MENYANTHES. Cor. fleshy, hairy within. Caps. with 2 valves bearing the seeds along their middle. Leaves ternate.
6. VILLARSIA. Cor. thin, ciliated. Capsule without regular valves. Leaves floating, cordate.



A. *Segments of the corolla twisted in aestivation. Leaves opposite.*  
(Gen. 1—4.)

1. *CICÉNDIA* Adans. *Gentianella*.

*Cal.* 4-cleft. *Cor.* 4-cleft, funnel-shaped, marcescent, the tube swelling. *Stam.* 4. *Anthers* opening longitudinally. *Style* 1, deciduous. *Stigma* entire. *Caps.* 1-celled, 2-valved. *Seeds* attached to 2 sutural receptacles, which at length separate with the opening of the 2-valved caps. — A name of Adanson's, the etymology of which is no where explained; perhaps derived from *κικύνος*, *curled hair*, on account of the slender entangled stems and branches.

1. *C. filiformis* Reichb. (*least G.*); leaves linear-lanceolate sessile, stem dichotomous slender, peduncles elongated. *Exacum E. B.* t. 235. *Gentiana Linn.*, *Microcale Don*.

Sandy turf-bogs, in the extreme south and south-west of England. In Ireland, it is found near Cork, upon Dursey Island, and at Glengariff. ☉. 7—10. — A small, slender and graceful plant, with yellow flowers, differing from *Gentiana* in the number of stamens and divisions of the cal. and corolla.

2. *ERYTHRÆA* Renealm. *Centaury*.

*Cal.* 5-cleft. *Cor.* funnel-shaped, withering, its limb short. *Anthers* at length spirally twisted. *Style* 1, deciduous. *Stigmas* 2. *Caps.* linear, 2-celled. — Named from *ερυθρος*, *red*, the colour of the flowers in most of the species.

1. *E. Centaúrium* Pers. (*common C.*); stem nearly simple, leaves ovate-oblong, flowers nearly sessile fasciculate-paniculate, calyx half as long as the tube of the opening corolla. *Gentiana E. B.* t. 417.

Dry pastures, frequent. ☉. 6—9. — Stem 8—10 inches to a foot high. *Root-leaves* spreading, three-nerved, broader than those of the stem, which are in distant pairs. *Panicles* of flowers fascicled near the top of the stem, and forming a sort of *corymb*. *Corolla* handsome, rose-coloured.

2. *E. pulchella* Fries (*dwarf branched C.*); stem much branched, leaves ovate-oblong, flowers pedicellate in lax panicles, calyx nearly as long as the tube of the opening corolla. *Chironia E. B.* t. 458.

Sandy sea-shores, England and Scotland. Cape Clear Island, Ireland. ☉. 7—10. — Stems 2—4 or 6 inches high, slender and much branched from near the base. *Panicle* spreading, leafy, dichotomous, with a single flower-stalk between the branches. — Perhaps only a *var.* of the preceding.

3. *E. latifolia* Sm. (*broad-leaved tufted C.*); stem 3-cleft at the top, flowers in dense forked tufts, calyx nearly as long as the tube of the opening corolla, segments of the corolla lanceo-

late, lower leaves broadly elliptical with 5 or 7 ribs. *E. B. S.* t. 2719.

Sea-shore. Sandy ground near the sea, to the north of Liverpool. Near Holyhead. County of Down, Ireland. Staffa. ☉. 7, 8. — Some Irish specimens have the leaves an inch and a half long, and three quarters of an inch broad, not confined to the root, and rising one pair close above the other; yet we can hardly persuade ourselves they are distinct from *E. Centaureum*. Mr. W. Wilson observes that the lobes of the corolla are sometimes oval.

4. *E. linearifolia* Pers. (*dwarf tufted C.*); stem simple or branched, radical leaves crowded spatulate, cauline ones oblong linear obtuse, flowers sessile capitato-paniculate, calyx as long as the tube of the opening corolla deeply cleft. *Chironia littoralis* *E. B. t.* 2305. *Erythræa* Hook. Scot.

Sandy coasts of Northumberland, Lancashire, Wales, Scotland. Portmarnock sands, Ireland. ☉. 6—8. — Varying in height from 2—6 inches. Leaves all narrow. Cal.-segments very long, equalling the tube of the corolla, in our specimens scarcely united by a membrane as in the 2 preceding species; but most of the characters given for this species are said to vary in individuals; and it has perhaps little right to be kept distinct from *E. Centaureum*.

### 3. GENTIÁNA Linn. Gentian.

*Cal.* 4—5-cleft. *Cor.* subcampanulate, funnel- or salver-shaped, tubular at the base, destitute of nectariferous glands. *Stam.* 5. *Styles* persistent, often combined. *Caps.* of 1 cell; 2-valved. — Named from *Gentius* king of Illyria, who, according to Pliny, brought into use the species so much valued in medicine, the bitter *Gentian*, *G. lutea*.

\* *Cor.* subcampanulate, the throat naked.

1. *G. Pneumonanthe* L. (*Marsh G.*); leaves linear obtuse, flowers terminal and axillary nearly sessile, corolla 5-cleft. *E. B. t.* 20.

Moist heathy places, in several parts of England. 2. 8, 9. — Stem upright, 4 to 6 or 8 inches tall. Corolla large, deep blue within, having 5 broad greenish lines corresponding with the segments.

(*G. acaulis* L. : *E. B. t.* 1594, is neither a native, nor naturalized.)

\*\* *Cor.* somewhat funnel- or salver-shaped, with 5 large and 5 smaller segments.

2. *G. verna* L. (*Spring G.*); stem caespitose 1-flowered, leaves ovate lower ones crowded, calyx with sharp teeth and prominent angles, corolla salver-shaped with 5 large and 5 small alternate bifid segments. *E. B. t.* 493.

Alpine pastures, rare. Middleton in Teesdale, Durham; between Gort and Galway, Ireland; and on limestone rocks in the Barony of Burren in the same country. 2. 4.

3. *G. nivôlis* L. (*small alpine G.*); branches single-flowered, leaves elliptical, corolla salver-shaped 5-cleft with intermediate small bifid segments, calyx cylindrical its angles keeled (brown). *E. B. t.* 896.

Mountains of Scotland, exceedingly rare, Craigalleach; Ben Lawers; and Glen Isla, Clova. ☉. 8. — This rare and beautiful little alpine plant varies in height from 1 to 6 inches.

\*\*\* *Cor.* 4—5-cleft, somewhat salver-shaped, fringed at the throat.

4. *G. Amarëlla* L. (*small-flowered G.*); stem much branched, root-leaves oval spatulate upper ones ovate-lanceolate sessile, cal. lobes lanceolate nearly equal shorter than the tube of the corolla which is cylindrical or obconical its limb 5-cleft, germen linear-oblong and as well as the capsule sessile or shortly stipitate. *E. B. t.* 236.

Dry pastures, in England and Scotland, but not very common. ☉. 4—9. — In the *Flora Londinensis* an opinion is expressed that the *G. Amarëlla* and *G. Germanica* are not specifically distinct. Grisebach, Koch, and others, think they are; and the former author refers to specimens from Ripon in Yorkshire, as well as to the figure in *E. Bot.*, as belonging to *G. Germanica*. Mr. Luxford, in the *Phyt.* i. p. 381, has shown that, so far at least as regards British specimens, there are many intermediate states. Our Swiss ones of *G. Germanica* have certainly a conspicuous stalk (about an eighth of an inch long) to the capsule, and constantly large and obconical flowers, while *G. Amarëlla* of the north of Europe has a sessile capsule; but these, the southern and northern forms, are united by those of this country.

5. *G. campêstris* L. (*Field G.*); stem very much branched many-flowered, leaves ovate-lanceolate, 2 outer segments of the calyx very large ovate, corolla 4-cleft. *E. B. t.* 237.

Hilly pastures, frequent on a limestone or chalky soil in England and Ireland. Abundant in Scotland, especially near the sea. ☉. 8—10. — *Flowers* larger than in the preceding, and so numerous in specimens gathered on the Isle of Skye, that we have counted 86 on one plant.

(*Swertia perennis* L. : *E. B. t.* 1441, is said by Hudson to have been found in Wales by Dr. Richardson; but it is supposed that *Gentiana Pneumonanthe* had been mistaken for it.)

#### 4. CHLÓRA Linn. Yellow-wort.

*Cal.* of 8 deep segments. *Cor.* nearly rotate. *Stam.* 8. *Style* 1, deciduous. *Stigmas* 2, bifid. *Caps.* 1-celled, 2-valved, many-seeded. — Name derived from χλωρος, *pale* or *yellowish green*, in allusion to the colour of its flowers.

1. *C. perfoliáta* L. (*perfoliate Y.*); leaves connate-perfoliate ovate glaucous. *E. B. t.* 60.

Chalky and hilly pastures, chiefly in the middle and southern parts of England. In Ireland, on gravelly soil about Dublin, frequent. ☉. 6—9.—*Plant* very glaucous, with remote *leaves*, paniced above, and bearing many bright yellow *flowers*, very bitter.

B. *Segments of the corolla induplicate in æstivation. Leaves alternate.* (Gen. 5, 6.)

### 5. MENYANTHES Linn. Buckbean.

*Cal.* 5-partite. *Cor.* funnel-shaped, fleshy, the segments hairy within. *Stam.* 5. *Stigma* 2-lobed. *Capsule* 1-celled, 2-valved; valves bearing the *seeds* along their middle; *seeds* parietal.—Name: *μην*, a month, and *ανθος*, a flower: some say from the duration of the flower.

1. *M. trifoliata* L. (*Buckbean*, or *Marsh Trefoil*). *E. B.* t. 495.

Marshy places, boggy ground, &c., frequent. 4. 5—7.—*Roots* densely creeping and so matted as often to render the boggy ground firm where the plant grows. *Leaves* ternate, stalked: *leaflets* obovate, obscurely toothed. The base of the leaf is sheathing, whence arises a *flower-stalk*, supporting a compound *raceme* or *thyrsus*, of many white *flowers*, tipped externally with red and beautifully fringed with white filaments within.

### 6. VILLARSIA Vent. Villarsia.

*Cal.* 5-partite. *Cor.* rotate or funnel-shaped, thin and membranous, the limb often ciliated. *Stam.* 5. *Caps.* 1-celled, indehiscent (or 2-valved, the *seeds* attached to the margins of the valves).—Named in compliment to *M. de Villars*, author of *Flore du Dauphiné*.

1. *V. nymphæoides* Vent. (*Nymphæa-like V.*); leaves orbicular-cordate floating, peduncles aggregate single-flowered, corollas ciliated. *Menyanthes* L.: *E. B.* t. 217.

Rare, in rivers and still waters. In the Thames. Abundant in the canal near Downham Market and Wisbeach. In Yorkshire. 4. 7, 8.—A beautiful plant, easy of cultivation, and difficult to be eradicated. *Flower* large, yellow, curiously plaited. The canals in Holland are in some parts covered with this plant, which has quite a different habit from the true *Menyanthes*. *Stigma* 5-cleft. Mr. Brown first observed that, in all the aquatic species of this genus, the *capsule* is valveless; 2-valved in the others: hence Grisebach has divided it into two genera, *Leianthemum*, and *Villarsia*: our British species belongs to the former.

## ORD. LVII. POLEMONIACEÆ Juss.

*Calyx* of 5 divisions, persistent, sometimes irregular. *Corolla*

regular, 5-lobed. *Stamens* 5, from the tube of the corolla. *Ovary* single, 3-celled; ovules solitary in each cell or superposed. *Style* simple. *Stigmas* 3. *Capsule* 3-celled, 3-valved, valves separating from the axis. *Embryo* straight. *Albumen* horny. — *Herbaceous* plants. Leaves *simple or compound*.

### 1. POLEMONIUM Linn. Jacob's Ladder.

*Cor.* rotate. *Stam.* inserted upon the 5 teeth or valves which close the mouth of the corolla. *Capsule* many-seeded. — Named from *πολεμος*, war, according to Pliny, this plant having caused a war between two kings who laid claim to its discovery!

1. *P. cæruleum* L. (*blue J.*); leaves pinnated glabrous, leaflets oblong-lanceolate. *E. B.* t. 14.

Banks and bushy places, rare; chiefly found in the North. In Derbyshire and Yorkshire. About Queensferry, Arniston and Delvine woods, Scotland, but probably introduced. Knockmaron Hill, Ireland. 4. 6, 7. — *Stem* 1—2 ft. high, angular. *Flowers* large, blue, sometimes white.

## ORD. LVIII. CONVULVULACEÆ Juss.

*Calyx* of 4—5 sepals, permanent, imbricated, often very unequal. *Corolla* regular, deciduous; the *limb* plaited, 4—5-lobed. *Stamens* 4—5 from the base of the corolla. *Ovary* with 2—4 cells, seldom 1, sometimes in 2 or 4 divisions, few-ovuled, ovules solitary in each cell or collateral. *Style* 1, often divided, rarely 2. *Disk* annular, hypogynous or wanting. *Capsule* 1—4-celled, the valves fitting at their edges to the angles of a loose dissepiment, bearing the *seeds* at the base, or bursting transversely. *Albumen* in small quantity, mucilaginous. *Embryo* curved. *Cotyledons* plaited. — Herbs or Shrubs, generally climbing, milky, and purgative. *Scammony* is the product of *Convolvulus Scammonia*: *Jalap*, of *Exogonium purgans*. The *Sweet Potato*, a most valuable esculent root of the tropics and warm climates, is the *Batatas esculenta*. *Cuscuta* has no leaves, and is parasitical.

1. CONVULVULUS. *Calyx* not inclosed within bractæas. *Capsule* 2-celled, 2-valved. *Stems* leafy.
2. CALYSTEGIA. *Calyx* enclosed within 2 bractæas. *Capsule* 1-celled, 2-valved. *Stems* leafy.
3. CUSCUTA. *Calyx* not inclosed within bractæas. *Capsule* bursting transversely at the base. *Leaves* none.

### 1. CONVULVULUS Linn. Bindweed.

*Cal.* 5-sepaled, without external bractæas. *Cor.* campanulate.

*Style* 1. *Stigmas* 2, linear, cylindrical. *Ovary* 2-celled, 4-ovuled. *Caps.* 2-celled, 2-valved. — Named from *convolvere*, to *entwine*; whence comes, too, the English name *Bindweed*.

1. *C. arvensis* L. (*small B.*); stem climbing, leaves sagittate, their lobes acute, peduncles mostly single-flowered, bractæas minute distant from the flowers. *E. B. t.* 312.

Corn-fields, hedges, &c., especially in a light soil. *Fl.* 6, 7. — *Flowers* rather small, rose-coloured. *Root* running very deep into the ground, and difficult of extirpation.

## 2. CALYSTÉGIA R. Br. Calystegia. Hooded Bindweed.

*Cal.* 5-sepaled, inclosed within two large opposite *bractæas*. *Cor.* campanulate. *Style* 1. *Stigma* 2-lobed; lobes oblong, cylindrical, or flattened. *Ovary* sometimes 2-celled at the base, 1-celled towards the apex, 4-ovuled. *Caps* 2-valved, 1-celled. — Name: *καλος*, *beautiful*, and *στέγη*, a *covering*, on account of the *bractæas*.

1. *C. sépium* Br. (*great C.*, or *H.*); stem climbing, leaves sagittate their lobes truncate, peduncles 4-sided single-flowered, bractæas heart-shaped, stigmas short and obtuse. *Convolvulus* L.: *E. B. t.* 313.

Moist woods and hedges. *Fl.* 6—8. — *Flowers* very large, showy, pure white, sometimes rose-coloured, or striped with pink.

2. *C. Soldanella* Br. (*Sea-side C.*); stem prostrate glabrous, leaves reniform fleshy, peduncles 4-sided single-flowered their angles winged, bractæas ovate, stigmas ovate obtuse wrinkled. *Convolvulus* L.: *E. B. t.* 314.

Sea-shore in sandy places, frequent. *Fl.* 6—8. — *Root* long, creeping. *Flowers* few, large, rose-coloured. *Ovary* 1-celled, with a ridge on each side in place of dissepiments. *Stigmas* large.

## 3. CÚSCUTA Linn. Dodder.

*Cal.* 4—5-cleft. *Cor.* campanulate, 4—5-lobed, the tube usually furnished with scales on the inside. *Styles* 2 (rarely united). *Ovary* 2-celled, 4-ovuled. *Caps.* bursting all round transversely at the base, 2-celled. — *Parasitical leafless* plants, with long twining *filiform* stems. — Derived probably from its Arabic name, *Keshout*; or from the Hebrew *chuz*, to *bind* or *surround*.

1. *C. Europæa* L. (*greater D.*); heads of flowers bracteated sessile, styles included, corolla (at first) with a cylindrical tube afterwards ventricose longer than the close-pressed calyx, "scales adpressed to the tube bifid distant below with rounded spaces." *E. B. t.* 378.

Parasitical on nettles, thistles, &c., not very common. ☉. 7—9. *Stems* very long, red, having small tubercles or papillæ, which serve

as roots. *Flowers* clustered, of a pale yellowish-rose colour. *Scales* seem always to exist in the *corolla*, but from being adpressed are not readily observed.

2. *C. \*Epilinum* Weihe (*Flax D.*); heads of fleshy flowers bracteated sessile, styles included, corolla with a globose tube scarcely longer than the campanulate calyx, "scales adpressed to the tube bifid fimbriated distant below with rounded spaces." *E. B. S. t.* 2850.

On flax. Near Ellesmere, Salop; Trelydan Hall, near Welsh Pool, Montgomeryshire. ☉. 8. — *Stems* simple, yellowish-green. *Flowers* fewer in a head, much more succulent than in the preceding species, and cellular when seen under a lens. *Tube* of corolla always globose; *filaments* very short. *Calyx* broad and spreading, with 5 broad acute teeth. This is abundant in Germany, whence it was probably introduced with flax-seed to us, and is very injurious to the crops of that plant, upon which it is a parasite.

3. *C. Epithymum* L. (*lesser D.*); styles exserted, heads of many small flowers bracteated sessile, corolla with a cylindrical tube longer than the campanulate calyx, "scales converging as long as the tube of the corolla fimbriated and rounded at the end approximate below with narrow acute spaces." *E. B. t.* 55.

Frequent on furze, heath, and thyme, in exposed situations in England and Scotland. ☉. 7—10. — Smaller than the two preceding species, especially in the *flowers*. *Calyx-segments* acuminate.

4. *C. \*Trifolii* Bab. (*Clover D.*); styles exserted, heads of small flowers bracteated sessile, "tube of the corolla cylindrical, scales converging half as long as the tube of the cor. fimbriated and rounded at the end distant below with rounded spaces, calyx narrowed below as long as the tube of the corolla." *E. B. S. t.* 2898.

On clover chiefly. Norfolk; Suffolk; Essex; Sussex; Isle of Wight. ☉. 7—9. — Supposed to have been introduced with clover-seed from the Continent, where however it does not seem to be acknowledged as a *species*. It is obviously very near the last, and chiefly differs by the form of the spaces between the scales; but whether that and some other characters proposed for this genus do not depend on the nature of the plant to which the individual is attached has yet to be tested. From the difficulty of ascertaining the real structure of these scales in our dried specimens, we have relied in a considerable degree on Mr. Babington's accuracy.

## ORD. LIX. BORAGINACEÆ De Cand.

*Calyx* 5- rarely 4-cleft, persistent. *Corolla* hypogynous, monopetalous, most frequently regular, 5-cleft, sometimes 4-

cleft, with imbricated æstivation. *Stamens* 5, inserted into the *corolla*, alternate with its segments and equal to them in number, rarely more. *Ovary* 4-partite, 4-seeded. *Ovules* definite, pendulous. *Style* from near the base between the lobes of the ovary. *Achenes* 4, apart or united at the base. *Seeds* without or nearly without *albumen*. *Radicle* superior.—Herbs or Shrubs. Leaves *alternate*, without *stipules*, usually *scabrous*. Flowers *generally in more or less compound unilateral and circinate cymes (presenting the appearance of spikes or racemes)*.—The BORAGINACEÆ are mild, emollient, and mucilaginous, sometimes slightly bitter and narcotic. The roots of several species afford a red dye.

\* *Throat of the corolla without either scales or valves.*

1. ECHIMUM. Cor. irregular. Filaments long, unequal.
2. PULMONARIA. Cor. regular, funnel-shaped. Cal. prismatic, 5-cleft.
3. LITHOSPERMUM. Cor. regular, funnel-shaped. Cal. 5-partite. Stamens included, filaments very short. Achenes stony.
4. MERTENSIA. Cor. regular, funnel-shaped. Cal. 5-parted. Stamens protruded, filaments elongated. Achenes subdrupaceous.

\*\* *Throat of the cor. more or less closed with scales or valves.*

† *Filaments bifid.*

9. BORAGO. Inner branch of filaments bearing an exserted anther. Cor. rotate.

†† *Filaments entire. Stamens included.*

‡ *Scales subulate, alternate with the filaments.*

8. SYMPHYTUM. Cor. tubular-campanulate.

‡‡ *Scales or valves obtuse.*

7. LYCORIS. Tube of cor. slightly bent, limb oblique.
6. ANCHUSA. Tube of cor. straight; lobes imbricated (not convolute) in æstivation. Cal. in fruit equally divided, terete. Nuts ovate, compressed, wrinkled. Flowers in leafy racemes.
5. MYOSOTIS. Tube of cor. straight; lobes convolute in æstivation. Cal. in fruit equally divided, terete. Nuts ovate, compressed, smooth. Racemes leafless.
10. ASPERUGO. Tube of cor. straight. Cal. in fruit compressed, unequally 2-valved. Nuts ovate, compressed. Flowers axillary, solitary.
- 10a. ECHINOSPERMUM. Tube of cor. straight. Cal. equally divided, terete. Nuts triquetrous, with muricated margins.
11. CYNOGLOSSUM. Tube of cor. straight. Cal. equally divided, terete. Nuts depressed, roundish-ovate, muricated.

\* *Throat of the corolla naked (without conspicuous scales or valves). (Gen. 1—4.)*\*

1. E'CHIUM Linn. Viper's Bugloss.

*Cor. irregular; its throat dilated, open and naked. Filaments*



very long, unequal. *Style* bifid. *Achenes* wrinkled, with a flat base, seated on an hypogynous disk, free from the style. — Named from *εχis*, a *viper*; because this, or some allied plant, was supposed to be an effectual remedy against the bite of that animal.

1. *E. vulgäre* L. (*common V.*); stem herbaceous simple hispid with tubercles, leaves linear-lanceolate hispid, flowers in lateral short spikes, stamens longer than the corolla. *E. B. t.* 181. *E. italicum* *E. B. t.* 2081. (not *L.*)

On old walls, banks, fields, and waste grounds, especially in a sandy or gravelly soil: common on the Surrey hills, with pale fl. ♂. 6, 7. — *Stems* 2—3 feet high. *Root-leaves* spreading, petioled. *Spikes of flowers* lateral, secund, recurved, forming one long compound spike or raceme. *Corolla* very beautiful, at first reddish-purple, then brilliant blue, sometimes white.

2. *E. violáceum* L. (*purple-flowered B.*); stem herbaceous diffuse branched pilose-hispid, lower leaves ovate-oblong petiolate, upper ones oblong cordate and somewhat amplexicaul at the base, spikes elongated, stamens scarcely longer than the corolla. *E. B. S. t.* 2798.

Plentiful on the sandy grounds in Jersey. ♂. 7. — Quite a distinct species from *E. vulgäre*, and certainly the *E. violaceum* of Linnæus and the Continental botanists. It is much less hispid than *E. vulgäre*, destitute of tubercles. The stem is branched, spreading, often decumbent. The spikes much elongated, bearing more distant flowers. The stamens are very unequal, 2 of them much longer than the corolla, 2 of them about the same length, and 1 shorter.

## 2. PULMONÁRIA Linn. Lungwort.

*Cal.* with 5 angles, 5-cleft. *Cor.* regular, funnel-shaped, its throat naked. *Stamens* included: *filaments* very short. *Style* simple. *Achenes* with a flat base, seated on an hypogynous disk, free from the style. — Named from *pulmo*, the *lungs*; from the use formerly made of this and other *Boraginaceæ* in pulmonary affections. In the present instance, the spotted leaves, resembling the lungs, were the principal recommendation.

1. *P. officinális* L. (*common L.*); leaves scabrous, radical ones ovate-cordate petiolate, upper ones of the stem sessile ovate. *E. B. t.* 118 (*excl. the root-leaves*).

Woods and thickets, rare. Dane's wood, near Slindon, Sussex; Durham and Bedfordshire. Near Edinburgh and Glasgow, but scarcely wild. ♀. 5. — About 1 foot high. *Stem-leaves* all more or less ovate; lower ones petiolate, upper ones sessile; all with short hairs, and frequently spotted. *Flowers* purple.

2. *P. angustifolia* L. (*narrow-leaved L.*); leaves scabrous, radical ones petiolate, upper ones sessile all lanceolate. *E. B. t.* 1628.

Woods and thickets, rare. Isle of Wight, and New Forest, Hampshire, and in Flintshire. 2. 3—6. — Usually taller than the preceding, and different in the shape of its foliage, which is seldom spotted; but these marks are not constant. *Inflorescence* subcapitate.

### 3. LITHOSPÉRMUM Linn. Gromwell.

*Cal.* in 5 deep segments. *Cor.* funnel-shaped, its mouth naked (or with very minute scales). *Stamens* included: *filaments* very short. *Style* simple. *Achenes* stony, with a truncated base, seated on an hypogynous disk, free from the style. — Named from λίθος, a stone, and σπέρμα, a seed; from its very hard shining seeds or achenes. The English *Gromwell* has the same origin in the Celtic, — *graun*, a seed, and *mil*, a stone.

1. *L. officinale* L. (common *G.*); stem erect very much branched, leaves broadly lanceolate acute nerved rough above hairy beneath, tube of the corolla as long as the calyx, achenes smooth. *E. B. t.* 134.

Dry, waste and uncultivated places, and among rubbish: rare in Scotland. 2. 6. — *Stem* 1 to 1½ foot high. *Fl.* pale yellow. *Achenes* whitish-brown, highly polished; seldom more than 2 or 3 ripening in each calyx.

2. *L. arvense* L. (Corn *G.*, or *Bastard Alkanet*); stem erect branched, leaves lanceolate acute hairy, calyx a little shorter than the corolla its segments patent when containing the ripe wrinkled nuts. *E. B. t.* 123.

Corn-fields and waste ground. ☉. 5, 6. — *Corollas* white. *Calyxine segments* thrice as long as the fruit.

3. *L. purpureo-cæruleum* L. (creeping, or purple *G.*); barren stems prostrate, leaves lanceolate acute, tube of the corolla much longer than the calyx, achenes smooth. *E. B.* 117.

Thickets in a chalky soil, rare. Near Denbigh, in Wales; and Taunton, Somersetshire; Marychurch, Devon; Darentwood and Greenhithe, Kent; Carsewell Bay, Glamorganshire. 2. 6, 7. — Distinguished from the two preceding species by its large and bright blue flowers.

### 4. MERTÉNSIA Roth. Smooth Gromwell.

*Cal.* 5-cleft or 5-partite, terete, half the length of the cor. *Corolla* funnel-shaped, naked or with 5 plaits or wrinkles between the stamens. *Stamens* inserted near the apex of the tube, protruded; *filaments* ligulate; *anthers* 2-lobed at the base. *Style* filiform, simple, often elongated after flowering. *Achenes* subdrupaceous, with a flat or prominent base seated on an hypogynous disk, free from the style. — Named in honour of F. C. Mertens, a German botanist.

1. *M. maritima* Don (*Sea-side S.*); stems procumbent branched, leaves ovate rough with callous dots, upper ones lanceolate, all fleshy and glaucous, achenes smooth. *Pulmonaria* L.; *E. B.* t. 368. *Steenhammera Reich.* *Lithospermum Hook.*

Sea-coast among sand or loose stones. Rare in England, and only on the west coast. Wales. Plentiful in the north and west of Scotland. Between Portran and Skerries, Ireland. 4. 5, 6. — This is quite a northern plant, extending to the arctic regions. Lower leaves on foot-stalks; upper ones sessile. *Flowers* somewhat racemed, of a beautiful purplish blue: tube of the cor. short, glabrous inside at the base, with minute teeth at the mouth. Whole plant very glaucous; and, if the bloom is rubbed off, rough callous points appear, which become white and almost stony in drying, when the rest of the plant turns nearly black. The flavour of the leaves resembles that of oysters.

\*\* *Throat of the corolla more or less closed with scales.* (Gen. 5—11.)

#### 5. *Myosotis* Linn. Scorpion-grass.

*Cal.* 5-cleft. *Cor.* salver-shaped, the lobes obtuse, twisted in æstivation, the mouth half-closed with short rounded valves. *Stamens* included. *Style* simple. *Achenes* smooth, attached to the bottom of the calyx by a minute flat spot (not perforated at the base). — Named from *μῦς*, *μῦς*, a mouse, and *οὖς*, *ωτός*, an ear; from the shape of the leaves.

\* *Hairs on the calyx all straight and appressed.*

1. *M. palustris* With. (*creeping Water S.*, or *Forget-me-not*); calyx with straight appressed bristles cleft to about one third of its length, when in fruit campanulate open shorter than the divergent pedicels, teeth short triangular, limb of the corolla flat longer than the tube, style as long as the calyx, pubescence of the stem spreading (or wanting). *E. B.* t. 1973. *M. scorpioides, palustris* L.: *Sm. Fl. Brit.* i. p. 212.

Ditches and sides of rivers, abundant. 4. 6—8. — A very beautiful, though common plant, and considered to be the emblem of friendship in almost every part of Europe. About 1 foot high. *Flowers* among the largest of our species, bright blue with a yellow eye, and a small white ray at the base of each segment.

2. *M. répens* Don (*creeping Water S.*); calyx with straight appressed bristles cleft to about the middle, when in fruit open or connivent shorter than the divergent pedicel, teeth narrow-lanceolate acute, limb of the corolla flat longer than the tube, lobes somewhat emarginate, style as long as the calyx, pubescence of the stem spreading. *Borr. in E. B. S.* t. 2703.

Moist boggy situations in England and Scotland. 4. 6—8. — We fear this is not distinct from the last: the character is most unsatisfactory. De Candolle unites them.

3. *M. cæspitosa* Schultz (*tufted Water S.*); calyx with straight appressed bristles, when in fruit campanulate open shorter than the divergent pedicels, teeth narrow-lanceolate bluntish, limb of the corolla concave (or flat when fully expanded) equalling the tube, style very short, pubescence of the stem appressed. *Borr. in E. B. S. t.* 2661.

Common in watery places, both on clay and bog. ☉ or ♂. (4 or ♂. Sm.) 5, 6. — *Root fibrous*, not creeping, annual or biennial. *Stem* throwing out fibres from the lower joints. *Calyx* sparingly sprinkled with appressed white bristles, cleft more deeply than in *M. palustris*, perhaps less than in *M. repens*. *Corolla* varying in size, but usually not much exceeding the calyx.

\*\* *Hairs on the calyx-tube spreading, curved or hooked at the apex.*

4. *M. alpestris* Schmidt (*Rock S.*); calyx with straight and a few curved bristles deeply 5-cleft, when in fruit campanulate open shorter than the slightly spreading pedicels, limb of the corolla flat longer than the tube, root-leaves on long stalks. *M. rupicola E. B. t.* 2559. *M. suaveolens W. et K.* (not *Poir.*)

Highland mountains, at a great elevation. On the Breadalbane range, extending thence to Schehallion. 4. 7, 8. — *Stem* 4—6 inches or even 1 foot high, with patent leaves. *Lower leaves* on very long footstalks. Nothing can exceed the beauty of the large blue flowers, which are at first so compact as to be almost capitate, then lengthened into racemes. Fries, Koch, and De Candolle consider this an alpine state of *M. sylvatica*: the chief difference consists in the smaller size, long-stalked radical leaves, and campanulate, not ovate, fructiferous calyx.

5. *M. sylvatica* Hoffm. (*upright Wood S.*); calyx with spreading uncinatè bristles deeply 5-cleft when in fruit of a closed shorter than the divergent pedicels, limb of the corolla flat longer than the tube, style nearly as long as the calyx, root-leaves on short dilated stalks. *E. B. S. t.* 2630.

In dry shady places; chiefly in the north of England and Lowlands of Scotland, but not common, Surrey, Essex, and Kent; Holt, Norfolk. 4. 5—8. — *Flowers* very large and handsome. A smaller white variety is often cultivated under the name of *M. alba*. Various authors and cultivators pronounce this plant perennial, (Fries says "perennans;" Wahlenberg, "subperennans,") whilst the following species is annual or biennial, between which and the present we can point out no distinctive characters more satisfactory than the somewhat more deeply divided calyx of *M. sylvatica*, its shorter and less remarkably hooked bristles, the broader and flatter corolla, longer style, and the greater size of the whole plant.

6. *M. arvensis* Hoffm. (*Field S.*); calyx with spreading

uncinate bristles half-5-cleft, when in fruit ovate closed shorter than the divergent pedicels, limb of the corolla concave equaling the tube, style very short, raceme stalked. *E. B. S.* t. 2629. *M. intermedia* Link.

Very common in cultivated ground, hedge-banks, groves, &c. ☉ or ♂. 6—8. — Although Linnæus included other plants, now regarded as species, in his ideas of *M. scorpioides* and *arvensis*, and even preserved as such in his herbarium a specimen of the next species, yet, since it is evident from *Fl. Suec.* that this is what he held to be the type of the var., we think it best to follow those botanists who have named it *M. arvensis*: Fries asserts that every Swedish botanist knows it to be the “ipsissimam *M. arvensem* Linn.,” it is, moreover, the only one usually found in cultivated fields. This species and *M. sylvatica* are inextricably confounded in *E. Fl.*, perhaps not unjustly.

7. *M. collina* Hoffm. (*early Field S.*); calyx with spreading uncinat bristles, when in fruit ventricose open equalling the diverging pedicels, limb of the corolla concave shorter than the tube, style about equal to the tube of the calyx, raceme stalked usually with one distant flower at the base. *E. B. S.* sub fol. 2629. *M. arvensis* *E. B.* t. 2558. *M. hispida* Schlecht.

On sandy banks, wall-tops, and other very dry places. ☉. 4, 5. — “May at all times be distinguished from *M. versicolor* at a glance, by its brilliant blue flowers, which do not expand till by the uncurling of the raceme they are brought into a perpendicular position, but continue open till the next 2 or 3 above them are expanded. Colour an unchangeable blue.” *J. E. Bowman*.

8. *M. versicolor* Lehm. (*yellow and blue S.*); calyx with spreading uncinat bristles when in fruit oblong closed longer than the almost erect pedicels, limb of the corolla concave shorter than the exerted tube, style as long as the calyx, raceme stalked. *E. B.* t. 2558 (ad calcem), and t. 480 (left-hand figure).

Common in wet meadows, &c., as well as dry places; hence varying much in height. ☉. 4—6. — *M. versicolor* is distinguishable at once from *M. stricta* (which is *M. versicolor* β. Lehm. and *M. arvensis* Reich.) by its stalked racemes. In *M. stricta* the pedicels are also shorter than the calyx; but the flowers begin among the leaves, sometimes from the very base of the stem; we believe, too, that none of them are yellow, and that they have a much shorter tube. “In *M. versicolor* the flowers are first yellow, then they acquire a tinge of blue, and finally turn quite blue as the corolla shrivels. They also expand on the curled portion of the raceme while they are inverted, and by the time they become erect are shrivelled.” *J. E. Bowman*.

#### 6. ANCHÚSA Linn. Alkanet.

*Cal.* 5-cleft, or 5-partite. *Cor.* funnel-shaped, tube straight, its mouth closed with convex connivent scales, the segments imbricated (not twisted). *Stamens* included. *Achenes* de-

pressed. *Nuts* concave at the base, seated on an hypogynous disk, free from the style.—Name: *αρχουσα*, in Greek, from *αρχα*, to *constrict*, “because any one chewing the leaves, and spitting into the mouth of a viper, will kill it,” *Diosc.*, by means of its (supposed) power of creating irritation and inflammation in the throat. (!) The roots of one species, *A. tinctoria*, yield a red dye which was used in former times to stain the face.

1. *A. officinális* L. (*common A.*); leaves oblong-lanceolate, spikes crowded unilateral, bractæ ovate-lanceolate as long as the calyx. *E. B.* t. 662.

Waste ground, rare. On the Links at Hartley Pans, Northumberland. Kilsyth and Arnbrae; and at Uddingston, 8 miles from Glasgow. 4. 6, 7. — *Stem* 1—2 feet high, rough and hispid. *Cor.* deep purple, the segments of the *limb* rather narrow.

2. *A. sempervirens* L. (*evergreen A.*); leaves ovate, lower ones upon long stalks, peduncles axillary, flowers subcapitate accompanied by two leaves. *E. B.* t. 45.

Waste ground, among ruins, and by road-sides, in many parts of England; perhaps wild in Yorkshire and Devonshire. Scotland, but certainly introduced. 4. 5, 6. — *Flowers* of a beautiful blue. The shape of the *corolla* is, as Sir J. E. Smith observes, rather salver- than funnel-shaped; and thus the genus is with difficulty distinguishable from *Myosotis*, unless attention be paid to the achenes, and the æstivation of the corolla. Daily experience teaches that the more natural the families, the greater is the skill requisite for framing decided marks of distinction between the genera.

#### 7. *Lycopsis* Linn. Bugloss.

*Cal.* deeply 5-cleft. *Cor.* funnel-shaped, with a curved *tube*, the mouth closed with convex connivent scales: *limb* oblique. *Stamens* included. *Achenes* depressed, concave at the base, seated on an hypogynous disk, free from the style. — Named from *λυκος*, a *wolf*, and *οψis*, a *face*; from a fancied resemblance in its gaping flower to the head of a wolf.

1. *L. arvensis* L. (*small B.*); leaves lanceolate repand-denticulate very hispid, calyx erect while in flower. *E. B.* t. 938.

Corn-fields and hedge-banks, frequent. ☉. 6, 7. — Whole plant very hispid; hairs or bristles seated on a white, callous tubercle. *Lower leaves* lengthened into a petiole; *upper ones* sessile, semiamplexicaul. *Racemes* leafy. *Flowers* small, bright blue; differing from those of *Anchusa* in the curvature of the tube.

#### 8. *Symphytum* Linn. Comfrey.

*Cal.* 5-cleft or 5-partitè. *Cor.* enlarged upwards, its throat closed with connivent lanceolate subulate scales. *Achenes* ovate, excavated at the base, seated on an hypogynous disk,

free from the style. — Named from *συμφυω*, to unite; from its imagined vulnerary qualities.

1. *S. officinale* L. (common C.); stem winged above, leaves ovate-lanceolate attenuated at the base and very decurrent. *E. B. t.* 817.

Banks of rivers and watery places, frequent. *yl.* 5, 6. — Stem 2—3 ft. high, branched above. *Root-leaves* ovate, petiolated. *Racemes* in pairs, secund, drooping. *Corollas* large, yellowish-white, often purple.

2. *S. tuberosum* L. (tuberous C.); stem simple, leaves ovate-oblong attenuated at the base, upper ones only slightly decurrent. *E. B. t.* 1502.

Shady woods and river-banks; frequent in Scotland, particularly in the Lowlands, rare in England. *Durham.* *yl.* 6, 7. — Resembling the last, but it is very distinct. Upper leaves, from which the *peduncles* spring, generally in pairs, large, ovate-lanceolate, a little decurrent; whereas those of *S. officinale* are very narrow, and run down into winged appendages to the stem.

### 9. BORÁGO Linn. Borage.

*Cal.* deeply 5-cleft. *Cor.* rotate, having its throat closed with 5 erect obtuse and emarginate teeth. *Stamens* exserted: *filaments* bifid, the inner branch bearing the anther; *anthers* linear-lanceolate, connivent. *Achenes* with an excavated base, seated on an hypogynous disk, free from the style. — Named from *cor*, the heart<sup>1</sup>, and *ago*, to bring, thence corrupted into *Borago*: or more directly from *Borrach*, a courageous or noble person, in Celtic.

1. *B. \*officinalis* L. (common B.); lower leaves obovate attenuated at the base, segments of the corolla ovate acute spreading. *E. B. t.* 36.

Among rubbish and waste ground. *♂.* 6, 7. — Whole plant very hispid. *Stem-leaves* petiolate and eared at the base, uppermost ones sessile. *Cor.* large, brilliant blue, with very prominent *stamens*. It forms an ingredient with wine, water, lemon, and sugar, in a favourite English drink called a *cool tankard*.

### 10. ASPERÚGO Linn. Madwort.

*Cal.* 5-cleft, unequal, with alternate smaller teeth, enlarged and compressed in fruit. *Cor.* (short) funnel-shaped, its mouth closed with convex connivent scales. *Achenes* compressed, warted, fixed by their edge to the persistent base of the style. — Named from *asper*, rough; eminently applicable to this plant, even among the group of *Asperifolia*.

<sup>1</sup> Hence the old adage — "I Borage always bring Courage."

1. A. *\*procumbens* L. (*German M.*). *E. B. t.* 661.

Waste places, principally in the North. Durham; Northumberland; Salop; Essex; Kent. Carnarvonshire. About Dunbar, and near Edinburgh; Forfar and Moray shires. ♂. 6, 7. — *Stems* procumbent, angular, rough with short hooked prickles. *Leaves* oblong-lanceolate, solitary or opposite, or 3—4 nearly from the same point of the stem; lower ones petiolate, all rough and slightly hispid. *Flowers* blue, axillary, solitary. *Peduncles* short, at first erect, then curved downward. *Cal.* small, much enlarged in fruit.

(*Echinosperrum Lappula* has been found at Southwold, Suffolk, in August, 1839; and near Ware mill, Hertfordshire, in 1841; but we fear it had been introduced from the Continent.

## 11. CYNOGLOSSUM Linn. Hound's-tongue.

*Cal.* 5-cleft. *Cor.* (short) funnel-shaped, its mouth closed with prominent, convex, connivent scales. *Stamens* included within the corolla. *Achenes* roundish-ovate, depressed, muricated, fixed by the edge to the persistent base of the *style*. — Named from *κυνων*, a *dog*, and *γλῶσσα*, a *tongue*; from the shape and texture of the leaf.

1. C. *officinale* L. (*common H.*); lower leaves elliptical stalked softly downy, upper ones lanceolate narrowed below, subcordate and semiamplexicaul, racemes without bractæas. *E. B. t.* 921.

Waste grounds and by road-sides; less frequent in Scotland. ♂. 6, 7. — Whole plant soft to the touch, dull-green, with a fetid smell; often 2 feet high. Lower *leaves* on long foot-stalks. *Flowers* purplish-red. *Fruit* very rough: *achenes* flat in front, surrounded by a thickened slightly prominent margin.

2. C. *syboticum* Hænke (*green-leaved H.*); stem-leaves lanceolate broad at the base shining sessile slightly hairy and scabrous especially beneath, upper ones somewhat narrowed below and amplexicaul, racemes without bractæas. *E. B. t.* 1642.

Shady places, by road-sides, &c., in the middle and east of England, rare. Carse of Gowrie in Scotland. Near Balbriggan, Ireland. ♂. 6, 7. — Distinguished readily from the last by its more or less shining and brighter-coloured *leaves*, free from pubescence, and their different figure. *Root-leaves* ovate-lanceolate, on very long foot-stalks. *Achenes* flat in front, without a prominent margin.

## ORD. LX. SOLANACEÆ Juss.

*Calyx* 5- rarely 4-partite, persistent. *Corolla* monopetalous, hypogynous, its *limb* 5-cleft, equal or somewhat unequal, deciduous, with a plicate aestivation. *Stamens* inserted into the corolla, alternate with its segments and equalling them in number. *Ovary* 1- 2- or 4-celled, many-seeded. *Style* 1. *Stigma*



obtuse, rarely lobed. *Pericarp* 1- 2- or 4-celled; either a *capsule* with a parallel double dissepiment, or a *berry*, with the receptacles united to the dissepiments. *Seeds* numerous. *Embryo* included in a fleshy *albumen*, more or less curved, often out of the axis. *Radicle* opposite the *hilum*.—Herbs or shrubs. *Leaves* alternate, without stipules, floral ones sometimes opposite. *Inflorescence* usually extra-axillary (lateral with respect to the *petiole*). Linnæus called this family *Luridæ*, and fancied that their lurid appearance indicated the dangerous properties common to many of them. They are acrid and narcotic, as the *Deadly Night-Shade*, *Mandrâgora*, *Henbane*, *Thorn-apple*, *Tobacco*, &c.; whilst the root of one, when cooked, affords a most important article of food, the *Potato*; and the fruits of the *Love-apple*, *Winter-cherry*, and *Capsicum* are condiments.

1. *DATURA*. Cal. tubular. Caps. 4-valved.
2. *HYOSCYAMUS*. Cal. tubular. Caps. opening transversely with a lid.
3. *SOLANUM*. Cal. deeply divided. Anthers connivent, opening by pores.  
Berry 2-celled.
4. *ATROPA*. Cal. 5-partite. Anthers distant. Berry 2-celled.

### 1. *DATÚRA* Linn. Thorn-apple.

*Cal.* tubular, deciduous. *Cor.* funnel-shaped, angular, plaited. *Anthers* opening by longitudinal slits. *Stigma* 2-lobed. *Capsule* half-4-celled, 4-valved.—Named from its Arabic appellation *Tatôrah* (Forsk.). In some parts of the East Indies it is called *Daturo*.

1. *D. \*Stramónium* L. (common *T.*); herbaceous, leaves ovate angulate-sinuate glabrous, fruit ovate erect clothed with numerous nearly equal spines. *E. B. t.* 1288.

Waste ground in England. ☉. 7—10. — The narcotic qualities of this plant are well known. The *capsule* is 2-celled; but each cell is again divided below by a dissepiment, so that the lower portion has 4 dissepiments of which 2 only reach the top; the summit is truly 2-celled. *Flowers* white. A variety, with purple stems and flowers, has been found by Dr. Bromfield at Southsea, Portsmouth.

### 2. *HYOSCÝAMUS* Linn. Henbane.

*Cal.* tubular, 5-cleft. *Cor.* funnel-shaped, oblique. *Anthers* opening by longitudinal slits. *Stigma* capitate. *Caps.* 2-celled, opening with a lid.—Named from *ús, vos*, a hog, and *κνῆμος*, a bean. Hogs are said to eat the fruit, which bears some resemblance to a bean: the seeds do not prove injurious, though the plant be esteemed poisonous.

1. *H. niger* L. (common *H.*); leaves amplexicaul sinuated, flowers nearly sessile axillary unilateral. *E. B. t.* 591.

Waste places, especially in a chalky soil, often near towns and

villages. ☉ or ♂. 6—8.—Whole plant covered with unctuous fetid hairs. Stem much branched, rounded. Leaves subovate. Calyx veined, as is the large dingy yellow corolla, with purplish-brown lines, which however are wanting in a variety found in Surrey by Mr. Watson; its tubular part swells and firmly encloses the capsule, of which the upper portion falls off like a lid. Plant highly narcotic.

### 3. SOLANUM Linn. Nightshade.

Cal. of 5—10 segments. Cor. rotate. Anthers opening with 2 pores at the extremity. Berry roundish, 2- or more celled. —Name of doubtful origin. According to some from *solamen*, on account of the comfort or solace derived from some species as a medicine.

1. *S. Dulcamara* L. (woody N. or Bittersweet); stem without thorns shrubby flexuose climbing, leaves cordate, upper ones auricled hastate, corymbs drooping inserted opposite the leaves. *E. B. t.* 565.

Moist hedges and thickets. Not common in Scotland. About Dublin. h. 6—8.—Glabrous or hairy. Flowers purple, with 2 green tubercles at the base of each segment. Anthers large, yellow, united in a pyramidal or cone-shaped figure. Berries ovate, red.—This has been much employed in medicine, especially in rustic practice. A var., with prostrate diffuse stems, a more deeply divided calyx with rounded segments, and few or none of the leaves hastate, grows on the pebbly sea-beach in Sussex, Cornwall, and Galway; it was first noticed by Ray.

2. *S. nigrum* L. (common N.); stem without thorns herbaceous, leaves ovate bluntly toothed and waved, umbels lateral drooping. *E. B. t.* 566.

Waste places, fields, &c., frequent. ☉ or ♂. 6—11.—Flowers white. Berries globose, black,—sometimes green in Sussex and at Walthamstow: *Borrer*.

### 4. A'TROPA Linn. Dwale.

Cal. 5-partite. Cor. campanulate, with a short tube, the lobes equal. Stam. distant above. Berry of 2 cells.—Named from *Atropos*, one of the Fates, in allusion to its deadly quality; whence also the English name *dwale* (*deuil*, Fr.; *dolor*, Lat.).

1. *A. Belladonna* L. (common D., or deadly Nightshade); stem herbaceous, leaves ovate undivided, flowers axillary on short peduncles. *E. B. t.* 592.

Hedges and waste places, especially among ruins and near towns. 4. 6—8.—Stems 3 feet and more high. Leaves entire, some very large, but placed in pairs of unequal sizes. Flowers drooping, lurid purple. Berries shining, black, highly injurious when taken internally. Their effects are said to be best counteracted by drinking plentifully of vinegar.

## ORD. LXI. OROBANCHACEÆ Vent.

*Calyx* variously divided, persistent. *Corolla* irregular, persistent, with an imbricated æstivation. *Stamens* 4, didynamous. *Anthers* 2-celled, the cells distinct, parallel, often mucronate. *Ovary* on a fleshy disk, 1-celled, with 2—4 parietal, many-seeded receptacles. *Style* 1. *Stigma* 2-lobed. *Capsule* 2-valved. *Seeds* very minute. *Embryo* at the apex of a fleshy *albumen*.—Herbaceous, dingy-coloured, somewhat succulent, leafless plants, glandular and scaly, generally parasitical on the roots of other plants.

1. OROBANCHE. Cor. ringent, 4—5-cleft, deciduous with a persistent base.
2. LATHRÆA. Cor. two-lipped, deciduous, upper lip entire, concave.

1. OROBÁNCHÉ Linn. Broom-rapc.<sup>1</sup>

*Cal.* of 2 lateral, often combined and bifid segments, bracteated. *Cor.* ringent, 4—5-cleft. A *gland* is at the base of the *germen* beneath.—*Leafless, brown or purplish, herbaceous, scaly plants, often attached to the roots of other plants.*—Named from *οροσος*, a leguminose or pea-like plant, and *αρχειν*, to strangle: the roots, being frequently attached to plants of that description, are supposed to injure them.

\* *Bractæas* solitary under each flower. *Sepals* 2, entire or bifid, distinct or connected below in front. *Valves* of capsule cohering at the base and apex. *Ospreleon*.

1. *O. májor* L. f. (*greater B.*); stem simple, sepals 2-nerved equally bifid (or entire) nearly as long as the tube of the corolla, corolla campanulate ventricose at the base in front curved on the back, lips wavy scarcely denticulated, upper one concave nearly entire, lower one in 3 segments, the middle lobe twice as large as the lateral ones, stamens inserted near the base of the corolla, glabrous below, their upper part and the style glandular pubescent. *E. B.* t. 421. *O. Rapum Thuill.*

On the roots of Broom and Furze and other leguminose plants, not unfrequent in England. *4.* 5—7.—*Stem* 1—1½ ft. high, leafless. Whole plant dingy purplish-brown, pubescent. *Stem* swelling at the base and very scaly: scales more distant upwards and becoming *bractæas* among the flowers, one at the base of each. *Flowers* in a long *spike*. *Cor.* large.

<sup>1</sup> From the great difficulty of deriving characters in this genus from dried specimens, we have trusted to Reuter, in De Candolle's *Prodromus*, and others who have had numerous opportunities of studying the genus; but in all parasitical plants the appearance may be so completely altered by the structure of the tribe they prey upon, that we fear many reputed species are merely different states of the same.

2. *O. caryophyllacea* Sm. (Clove-scented B.); stem simple, sepals many-nerved lanceolate equally bifid shorter than the tube of the corolla touching each other or combined in front, corolla campanulate curved on the back, limb spreading unequally toothed, upper lip broad 2-lobed, lower 3-lobed, the segments erect obtuse nearly equal wavy, stamens inserted above the base of the corolla hairy below, their upper part and the style glandular-pilose, stigma dark purple. *E. B. S. t. 2639. O. Galii Dub.*

On the roots of *Galium Mollugo*, in South Kent. *4. 7.*

3. *O. rubra* Sm. (red B.); stem simple, sepals 1-nerved subulate acuminate longer than the tube of the corolla undivided, corolla tubular-campanulate slightly curved externally and the upper lip within glandular-pubescent, lips acutely toothed and crisped, upper one 2-lobed, lower 3-lobed, the middle segment rather longer than the lateral ones, stamens inserted near to the base of the corolla slightly hairy below, their upper part and the upper part of the style glandular-hairy. *E. B. t. 1786.*

Frequent upon basalt and trap rocks in the Hebrides and adjacent shores of the mainland, parasitical upon *Thymus Serpyllum*. Near Kirkcaldy. Cave-hill near Belfast, Ireland. *4. 7, 8.*—We have no doubt but this and *O. Epithymum* DC. are the same; but they differ in character as much as some of the other species.

4. *O. elatior* Sutt. (tall B.); stem simple, sepals many-nerved equally bifid as long as the tube of the corolla connected in front, corolla tubular-campanulate curved, limb spreading unequally toothed wavy, upper lip 2-lobed, lower 3-lobed, the segments nearly equal acute, stamens inserted below the middle of the tube of the corolla glandular-hairy in their lower half, upper part and the style nearly glabrous. *E. B. t. 568.*

Clover-fields and bushy places in a light gravelly soil, on *Centaurea Scabiosa*, in several parts of England. *4. 6—8.*—Taller and yellower than all the preceding. Flowers with their upper lip lobed. "Stamens inserted above the third part of the tube of the cor., but below its middle."

5. *O. Picridis* F. W. Schultz (*Picris B.*); stem simple, sepals 1-nerved entire or in front 2—3-nerved, gradually attenuated into as many subulate points longer than the tube of the corolla, corolla tubular ventricose at the base curved at the apex nearly straight at the back, lips denticulate wavy, upper nearly undivided its sides straight, lower of 3 roundish rather unequal lobes middle one the largest, stamens inserted below the middle of the tube hairy on the lower half within, style glandular-hairy below in front and on its upper half, lobes of the stigma (purple) nearly distinct. *E. B. S. t. 2956.*

On the roots of *Picris hieracioides*. Near Comberton, Cambridgeshire; Giltar Head, Pembrokeshire; Rose Hall Green, Isle of Wight.

⊙. 6, 7. — This and the two next are probably mere varieties, the characters assigned by authors being very unsatisfactory and somewhat contradictory; but from not having an opportunity of contrasting them in a living state, we yield at present to the opinion of others. Dr. Bromfield however is inclined to unite the present species with *O. minor*, from which it chiefly differs by the sepals, while he considers *O. Hederae* to be distinct.

6. *O. minor* Sutt. (*lesser B.*); stem simple, sepals many-nerved ovate below suddenly contracted into 1—2 subulate points as long or longer than the tube of the corolla, corolla tubular curved, limb obtusely toothed veined wavy, upper lip more or less emarginate its sides straight, lower of 3 roundish nearly equal lobes, stamens inserted below the middle of the tube glabrous more or less hairy below, style nearly glabrous or with scattered hairs in front, lobes of the stigma (purple) nearly distinct. *E. B. t.* 422.

Clover fields, abundant in Norfolk, Kent, Surrey, Hants, Brecknockshire, &c., "parasitic on a variety of plants of very different natural orders, but most frequently on the roots of *Trifolium pratense*." *Bromf.* ⊙. 6—10. — Dr. Bromfield well observes that the hairiness of the stamens varies exceedingly, and it is to be feared that the style does so likewise throughout the whole genus.

7. *O. amethystea* Thuill. (*bluish B.*); stem simple, sepals 3—9-nerved ovate below suddenly contracted into 1—2 subulate points, corolla tubular bent suddenly near the base and curved forwards then straight, lips unequally acutely denticulated wavy with branched veins, upper concave emarginate or 4-lobed, lobes of lower lip unequal middle one the larger, stamens inserted in the curvature of the corolla hairy at the base within glabrous above the middle, style nearly glabrous, lobes of stigma (purple) divaricate. *Hore in Phytol.* ii. p. 239. *O. Eryngii* Duby.

Parasitical upon *Daucus maritimus*, at Whitsand Bay near Plymouth. ⊙? (*Hore*). 4 (*Reuter*). 7. — We have not seen specimens, and have taken our character from Mr. Hore's description, between which and that by Reuter there are some points of difference; and on the Continent the plant seems confined to *Eryngium campestre* and *maritimum*. We fear it is too closely allied to *O. minor*, from which it appears only to differ by the curvature of the corolla, and the divaricated lobes of the stigma. Mr. Borrer (in the Bot. Gazette, ii. p. 96) states that Mr. Hore considered living plants of the true *O. minor* from Sussex to be identical with his plant.

8. *O. Hederae* Duby (*Ivy B.*); stem simple, sepals 1-nerved ovate below suddenly contracted into 1—2 subulate points nearly as long or longer than the tube of the corolla, corolla tubular curved, limb denticulate wavy, upper lip 2-lobed its sides straight, lower of 3 roundish nearly equal lobes, middle

lobe rather the longest, stamens inserted above the base of the corolla glabrous with a few scattered hairs on the lower half, style glabrous downy or with a few hairs on the upper part, lobes of the stigma (yellow) cohering to near the middle. *O. barbata* Bab. in *E. B. S.* t. 2859.

Parasitical upon Ivy in the south and west of England and Wales. Liexlep and Mucross Abbey, Ireland. 4. 6—8. — M. Reuter describes the insertion of the stamens to be only a little below the middle: we find them much nearer the base; so that this character may vary in different species. This is best and chiefly distinguished from the two last by its yellow stigma cleft only two-thirds down instead of to the base.

\*\* *Bractæas* 3 under each flower. *Sepals* 4—5, all united at the base into a tubular calyx. *Anthers* glabrous or woolly only on the suture. *Valves of capsule* separated at the apex. *Trionychion*.

9. *O. arenária* Bork. (*Sand B.*); stem simple, calyx 5-toothed, teeth triangular subulate shorter than the tube of the corolla, corolla tubular nearly straight, middle of the tube compressed at the back, throat slightly inflated, upper lip cloven, lobes of the lips obtuse reflexed at the margin, suture of the anthers hairy, style glandular-downy. *Phelipæa* Walt.: *Reuter*.

Parasitical on the roots of *Achillea Millefolium* and probably other allied genera, in the Channel Islands. 4. 7, 8. — We have seen no specimen.

10. *O. cærúlea* Vill. (*purple B.*); stem simple, calyx with 5 lanceolate acute teeth shorter than the tube of the corolla, corolla tubular curved in front, middle of the tube compressed, upper lip of the corolla cloven, lobes of the lips acute with reflexed margins, anthers glabrous, style glandular-downy. *E. B.* t. 423.

Grassy pastures near the sea, rare; principally found in Norfolk. 4. 6—8. — More inclining to purplish-blue than any of the preceding.

11. *O. ramósa* L. (*branched B.*); stem branched, calyx with 4 triangular ovate acuminate teeth, corolla tubular-infundibuliform, upper lip deeply cloven, all the lobes rounded nearly equal, stamens pubescent at the base, anthers glabrous or slightly ciliated, style sparingly glandular. *E. B.* t. 184.

On hemp-roots, very rare; chiefly found in Norfolk and Suffolk, Jersey. Sark. ☉. 7—9.

## 2. LATHRÆ'A Linn. Tooth-wort.

*Cal.* campanulate, equally 4-cleft. *Cor.* tubular, 2-lipped: the upper lip concave, entire; lower 3-cleft. A depressed gland is at the base of the germen. — Plants leafless, coloured. — Name: *λαθραϊος*, hid or concealed; the plant growing much concealed by the earth or dead leaves.

1. *L. squamaria* L. (*greater T.*); stem simple, flowers pendulous in one-sided racemes, lower lip of the corolla 3-cleft. *E. B. t.* 50.

Woods and coppices, apparently parasitic on the roots of Hasels, Elms, and other trees, in various parts of England, Scotland, and Ireland. 2. 3—5.—Branching from the very base.\* Whole plant succulent, with many fleshy, tooth-like scales. *Bractes* broadly ovate or lanceolate. *Flowers* purplish.

## ORD. LXII. SCROPHULARIACEÆ Juss.

*Calyx* 4—5-lobed, persistent. *Corolla* monopetalous, generally irregular, deciduous, with an imbricated aestivation. *Stamens* 4, didynamous, rarely equal, sometimes 2 or 5. *Style* 1. *Stigma* 2-lobed, rarely undivided. *Capsule* (very seldom a berry) 2-celled, 2—4-valved, or opening by pores; the valves entire or bifid, with a dissepiment either double from the inflexed margins of the valves, or simple, parallel and entire, or opposite and bipartite. *Receptacle* of the seeds central, united to the dissepiment, or eventually separating. *Seeds* few or numerous. *Embryo* straight, enclosed in the axis of a fleshy albumen.—Herbs, sometimes Shrubs, usually with opposite leaves. Br. In this Order are many powerfully medicinal plants, as the *Hedge-Hyssop*, *Gratiola*; the *Foxglove*, &c.

### A. *Stamens* 2.

#### 1. VERONICA.

### B. *Stamens* 4, didynamous or equal.

#### \* *Calyx* with 4 teeth or divisions,

2. BARTSLA. Upper lip of cor. entire or emarginate, arched, not compressed laterally.
3. EUPHRASIA. Upper lip of cor. bifid, not compressed laterally.
4. RHINANTHUS. Upper lip of cor. compressed laterally. Anthers obtuse. Calyx inflated.
5. MELAMPYRUM. Upper lip of cor. compressed laterally. Anthers obtuse. Calyx tubular.

#### \*\* *Cal.* with 5 teeth or divisions, or 2—3-lobed.

6. PEDICULARIS. Cal. inflated, 5-toothed (or 2—3-lobed), teeth sometimes leafy. Cor. ringent, open at the throat. Upper lip compressed.
- 6a. MIMULUS. Cal. prismatical, 5-toothed. Cor. ringent, upper lip folded back at the sides, not compressed.
7. SCROPHULARIA. Cal. 5-toothed or 5-cleft. Cor. nearly globose, un-
8. DIGITALIS. Cal. 5-partite. Cor. campanulate, unequal.
9. ANTIRRHINUM. Cal. 5-partite. Cor. personate, gibbous at the base.
10. LINARIA. Cal. 5-partite. Cor. personate, spurred at the base.

11. LIMOSELLA. Cal. 5-cleft. Cor. campanulate, equal. Caps. 1-celled.  
12. SIBTHORPIA. Cal. 5-sepaled. Cor. rotate, segments unequal. Caps.  
2-celled, loculicidal.

C. Stamens 5.

13. VERBASCUM. Cal. 5-sepaled. Cor. rotate, segments unequal. Caps.  
2-celled, septicidal.

A. Stamens 2. (Gen. 1.)

1. VERONICA Linn. Speedwell.

Cor. 4-cleft, rotate, lower segment narrower. Stam. 2. Caps. 2-celled.—Name first introduced into Botany in the middle ages, supposed by some to be a corruption of *Betonica*, by others to be a Celtic word corresponding to the modern Gaelic *firineachd*, *faithfulness*, of which the plant was an emblem, but obviously derived from *τεπε εικων*, the *sacred picture*, the flowers (like St. Veronica's handkerchief) being imagined to bear a representation of the countenance of Our Saviour.

\* Root perennial. Spikes or racemes terminal.

† Tube of the corolla longer than its own diameter.

1. *V. spicata* L. (*spiked S.*); raceme spicate elongated dense, leaves pubescent ovate or lanceolate crenate-serrated, entire towards the apex, the lower ones broader obtuse stalked, stem ascending branched only at the very base, capsule ovate emarginate with a long style.—*a.* lower leaves oblong wedge-shaped at the base. *E. B. t.* 2.—*β.* lower leaves ovate rounded or subcordate at the base. *V. hybrida* L.: *E. B. t.* 673.

Rare. In dry chalky pastures about Newmarket and Bury. — *β.* in Lancashire and in Wales. *γ.* 7, 8.

†† Tube of the corolla very short.

2. *V. serpyllifolia* L. (*Thyme-leaved S.*); raceme somewhat spiked many-flowered, leaves broadly ovate or elliptical very obtuse slightly crenate, capsules inversely reniform as long as the style.—*a.* racemes elongated. *E. B. t.* 1075.—*β. alpina*; stem prostrate often rooting, racemes short. *V. humifusa* Dicks.

Pastures and road-sides, abundant. On high mountains. *γ.* 5, 6.—The var. *β.* is a singular and very beautiful one, and is often mistaken for *V. alpina*. In both, the stems, and sometimes the leaves, are more or less pubescent.

3. *V. alpina* L. (*alpine S.*); raceme corymbose few-flowered, leaves elliptic-ovate toothed or entire, lower ones smaller, raceme hairy, hairs spreading not glandular, capsule obovate notched tipped with the very short style. *E. B. t.* 484.



Near the summits of the Highland mountains, rare. *¶*. 7, 8. — Stem about 4 inches high, turning black when dry. Best distinguished from all the varieties of *V. serpyllifolia* by its more upright growth, larger and more acute leaves; by the fewer, denser, and brighter blue flowers, which are more hairy especially about the calyx and bractæ; and by the obovate capsule with its very short style.

4. *V. saxatilis* L. (*blue Rock S.*); raceme lax few-flowered corymbose pubescent, the hairs not glandular, leaves elliptical subserrate, stem spreading, capsule ovate very slightly emarginate its valves bifid. *E. B. t.* 1027.

On perpendicular exposed rocks in Scotland, rare: the Breadalbane and Clova mountains. *¶*. 7. — Stems slender, procumbent, woody, much branched. Leaves glabrous, bright green, when dry almost black, but semipellucid, thin and distinctly veiny. Flowers large, of a most brilliant blue, in corymbs. What is usually known under this name in Switzerland and the Pyrenees is a variety of the next; if indeed, as Mr. Bentham suggests, the two species are distinct: there is no difference in the capsule.

5. *V. fruticulosa* L. (*flesh-coloured S.*); raceme many-flowered glandular-pubescent, leaves elliptic-lanceolate subserrated coriaceous, stem ascending woody branched at the base, capsule ovate very slightly emarginate its valves bifid. *E. B. t.* 1028.

On Ben Cruachan, Argyleshire: *Dr. Walker*. Ben Lawers: *R. Brown, Esq.* *¶*. 7. — No botanist, except those just mentioned, has ever detected this plant truly wild in the British dominions; nor have we been able to see a native specimen.

**\*\* Root perennial. Racemes axillary.**

6. *V. scutellata* L. (*Marsh S.*); racemes alternate, pedicels divaricated reflexed in fruit, leaves sessile linear somewhat toothed, capsule of 2 flattened orbicular membranous lobes, stem nearly erect. *E. B. t.* 782.

Wet places and sides of ditches. *¶*. 7, 8. — Racemes nearly opposite. Flowers flesh-coloured with darker bluish veins.

7. *V. Anagallis* L. (*Water S.*); racemes opposite, leaves sessile lanceolate serrated, capsule elliptical slightly emarginate, stem erect. *E. B. t.* 781.

Ditches and watery places, less frequent in Scotland than in England. *¶*. 7, 8. — Intermediate in appearance between *V. scutell.* and *V. Beccab.*, yet abundantly distinct from both. Stems succulent, a foot or more high. Leaves varying somewhat in width. Racemes long, many-flowered. Pedicels short, never reflexed. Flowers bluish or inclining to purple.

8. *V. Beccabunga* L. (*Brooklime*); racemes opposite, leaves stalked elliptical obtuse subserrated glabrous, stem procumbent at the base and rooting. — *α*. bractæ shorter than the pedicels,

flowers bright blue. *E. B. t. 655.* —  $\beta$ . bractæas longer than the pedicels, flowers pink or flesh-coloured. *V. limosa* *Lej.*

Ditches and water-courses, frequent. —  $\beta$ . Dalkeith.  $\gamma$ . 5—9. — Whole plant glabrous and very succulent. *Racemes* many-flowered.

9. *V. officinalis* L. (*common S.*); more or less pubescent, racemes spicate, leaves shortly stalked ovate serrated, stem procumbent creeping, capsule obovate triangular truncated or with a wide shallow notch. —  $\alpha$ . leaves broadly ovate rough with pubescence, stem very downy. *E. B. t. 765.* —  $\beta$ . nearly glabrous. —  $\gamma$ . small, leaves ovate-lanceolate, capsule obovate entire (abortive). *V. hirsuta* *Hopk.*: *E. B. S. t. 2673.*

Abundant in woods and pastures, especially in dry situations. —  $\beta$ . on mountains in Scotland and Ireland. —  $\gamma$ . dry heaths in Ayrshire.  $\gamma$ . 5—7. — A very variable plant, especially in size. *Leaves* astringent and bitter; hence sometimes used medicinally, and made into tea.

10. *V. montana* L. (*Mountain S.*); racemes lax few-flowered, leaves cordate-ovate petiolate serrated, stem hairy all round, capsule orbicular notched at the apex and base flat membranous glabrous ciliated much larger than the calyx. *E. B. t. 766.*

Moist woods, not unfrequent.  $\gamma$ . 4—7. — *Stem* a foot and more long, weak, trailing. *Leaves* large, on stalks about equal to them in length. *Capsules* large, quite flat, and resembling those of a *Biscutella*, veiny, their edges denticulate and slightly ciliated.

11. *V. Chamædrys* L. (*Germander S.*); racemes elongated many-flowered, leaves cordate-ovate nearly sessile inciso-serrate, stem bifariously hairy, capsule flat obovate deeply notched ciliated shorter than the calyx. *E. B. t. 623.*

Woods, pastures, and hedge-banks, frequent.  $\gamma$ . 5, 6. — *Stem* procumbent, as in the last species, having two opposite hairy lines, and these lines taking different sides above and below each pair of leaves, or decussate. *Leaves* wrinkled, sometimes deeply cut, *Flowers* large, numerous, very bright blue, greeting us at an early season of the year, and rendering the plant a general favourite.

\*\*\* *Root annual.*

† *Flowers axillary, solitary (the floral leaves being similar to the cauline ones).* *Pedicels recurved.* *Seeds cupped.*

12. *V. hederifolia* L. (*Ivy-leaved S.*); leaves all petiolate cordate with 5—7 large teeth or lobes, segments of the calyx cordate ciliate, capsule of two turgid lobes, seeds 2—4, stem procumbent. *E. B. t. 784.*

Fields and hedge-banks, common.  $\odot$ . 3—8. — *Stem* weak. *Leaves* rather fleshy, slightly hairy, the upper young leaves alone sessile or nearly so, the terminal tooth or lobe the largest. *Peduncles* longer than the leaves, recurved when bearing fruit. *Ovary* 4-ovuled. *Caps.* of two rounded glabrous lobes, each lobe having 2 (sometimes only 1)

large, black, transversely wrinkled, oval, gibbous seeds, which are hollowed on the under-side,

13. *V. agræstis* L. (*green procumbent Field S.*); leaves all petiolate cordate-ovate inciso-serrate about as long as the flower-stalks, segments of the calyx somewhat ovate or oblong, stem procumbent, capsule broadly suborbicular of 2 turgid keeled approximated lobes, cells 6—10-seeded.—*α*. sepals oblong obtuse, lower part of the corolla whitish. *Borr. in E. B. S. t. 2603*, —*β*. sepals ovate acute, petals wholly blue. *E. B. t. 783*. *V. polita* Fries.

Fields and waste places, abundant. ☉. 4—9. — Prostrate. *Stems* 3—4 inches long, slightly hairy. *Fruit* of two round tumid lobes, much smaller than the calyx. *Seeds* large, cupped. *V. agræstis*, *V. polita*, and *V. opaca* Fries (with spatulate sepals) agree in so many points, and differ in so few, and these of a variable nature in the genus, that we agree with Mr. Bentham that they form but one species.

\* 14. *V. Buxbaumii* Ten. (*Buxbaum's S.*); leaves all petiolate cordate-ovate inciso-serrate shorter than the flower-stalks, segments of the calyx lanceolate acute when in fruit much divaricated, stem procumbent, capsule obcordate-triangular of two turgid divaricated lobes which are compressed upwards and sharply keeled, cells 8—12-seeded. *E. B. S. t. 2769*.

Fields and cultivated places. Clover-field at Chalk-hole, near Margate; plentiful among turneps in a field adjoining the Bird-in-hand Inn, Burford, Oxfordshire; near Newcastle, along with both varieties of *V. agræstis*; Syderstrand, Norfolk, under a sunny wall. Shrubbery at Whiterig, Berwick-shire; near Dunfermline, and near Glasgow. ☉. 4—9. — This plant is distinguished from *V. agræstis* by its larger size, and greater hairiness, the divaricated lobes of the capsule, which are compressed upwards and sharply carinated, and the larger blue corolla, rivalling in size and beauty that of *V. Chamædrys*.

†† *Flowers* spicate or racemose (the upper floral leaves becoming gradually much smaller than the cauline ones). *Pedicels* erect or nearly so.

15. *V. arvensis* L. (*Wall S.*); leaves cordate-ovate serrated the lower ones petiolate, the upper or bractæas sessile lanceolate quite entire longer than the flowers, pedicels shorter than the calyx, capsules broadly obcordate compressed emarginate with roundish ciliated lobes, seeds 12—14 compressed flat on the one side, stem ascending. *E. B. t. 784*.

Fields and walls, plentiful. ☉. 4—7. — Very different from the last three, especially in its inflorescence, which, if the upper leaves be considered bractæas, as they really are (for they differ both in size and shape from the cauline ones), is truly racemose or subspicate. The same may be said of the two next species, and of some Continental ones, especially *V. acinifolia*.

16. *V. verna* L. (*vernal S.*); leaves inciso-pinnatifid, the

upper ones or bracteas lanceolate entire, pedicels shorter than the calyx, capsule broadly obcordate compressed emarginate with roundish ciliated lobes, seeds 12—14 thin flat. *E. B. t. 25.*

Very rare. About Thetford, Bury, and Mildenhall, Suffolk. ☉. 4, 5. — A very small, upright, scarcely branching plant, allied to *V. arvensis*.

17. *V. triphyllos* L. (*blunt-fingered S.*); leaves broadly ovate incised, lowermost ones petiolate, upper or bracteas sessile digitate the segments obtuse, pedicels longer than the calyx, capsules obcordate compressed with roundish ciliated lobes, seeds many concave on the one side. *E. B. t. 26.*

Very rare; in sandy fields, about Thetford, Bury, and Mildenhall, Suffolk. Acomb near York. ☉. 4. — Stem 3—4 inches high, with spreading branches. Flowers a very deep blue, the lowermost often on much elongated pedicels.

*B. Stamens 4, and usually didynamous (in British species).*  
(Gen. 2—12.)

## 2. BARTSIA<sup>1</sup> Linn. Bartsia.

*Cal.* tubular, mostly coloured, 4-cleft. *Cor.* ringent with a contracted orifice; upper lip arched, entire or emarginate; lower one in 3 equal reflexed lobes. *Anthers* mostly hairy and the cells mucronate at the base. *Caps.* ovate-oblong, compressed, with 2 cells and many seeds. — Named in honour of John Bartsch, a Prussian botanist, and friend of Linnæus, who died at Surinam.

1. *B. alpina* L. (*alpine B.*); stem erect hairy, leaves opposite ovate obtusely serrated, upper ones cordate-amplexicaul, flowers in a terminal short leafy spike, anthers hairy. *E. B. t. 361.*

Rocky alpine pastures; rare. Near Orton, Westmoreland; Middleton Teesdale, on the Yorkshire and Durham sides of the river. Malghyrdhy, Corrach-Uachdar, and Ben Lawers, in Breadalbane; Scotland. 4. 6—8. — Stems about a span high, simple, several from the same root. Upper leaves or bracteas often tinged with purple. Flowers large, deep purplish-blue, downy; lips of equal length.

2. *B. viscosa* L. (*yellow viscid B.*); leaves lanceolate incisoserrate, upper ones alternate, flowers solitary axillary distant, lower lip large with two tubercles, anthers hairy. *E. B. t. 1045.*

<sup>1</sup> Mr. Benthham and others have lately divided this genus into several, which we do not consider necessary to adopt in a local flora, where we have only one representative of each: they are—

1. BARTSIA. Seeds numerous, transverse, longitudinally ribbed or winged. (*B. alpina*.)

2. EUPHRASIA. Seeds very numerous and minute, scarcely striated under a lens. (*B. viscosa*.)

3. ODONTITES. Seeds numerous, pendulous. (*B. Odontites*.)

The last has been united to *Euphrasia* by Mr. Babington.

Pastures, in many places in the West of England and Wales, and South-west of Scotland and South of Ireland. Jersey. ☉. 6—10. — *Flowers* yellow, handsome.

3. *B. Odontites* Huds. (*red B.*); leaves linear-lanceolate remotely serrated, upper ones (or bracteas) alternate, flowers in unilateral racemes, anthers nearly glabrous, stem branched erect scabrous pubescent. —  $\alpha$ . leaves attenuated at the base, calyx-segments lanceolate as long as the tube, filaments and stigma hairy, capsule oblong. *E. B.* t. 1415. —  $\beta$ . leaves broader at the base, calyx-segments broadly triangular one half the length of the tube, filaments and stigma nearly glabrous, capsule broadly oval almost rounded. — *Odontites rotundata* Ball in *Ann. Nat. Hist.* 2nd ser. iv. p. 30.

Corn-fields and waste places, frequent.  $\beta$ . Sussex and Cambridgeshire. ☉. 6—8. — *Racemes* many, long, erect. *Flowers* reddish-purple, pubescent. *Anthers* connected together by a few hairs, and having, a few glands or clavate hairs along the connectivum at the back, otherwise glabrous. We have seen no specimens of *var. β.*, but it does not seem to differ in any essential points from the more common forms.

### 3. EUPHRÁSIA Linn. Eye-bright.

*Cal.* tubular, 4-cleft. Upper *lip* of the *cor.* 2-lobed, the lobes broad; lower one of 3 nearly equal lobes. Cells of the *anthers* mucronate at the base. *Caps.* ovate-oblong, compressed, 2-celled, many-seeded. *Seeds* pendulous, longitudinally ribbed. — Name: *ευφρασία*, joy (from *ευ*, well, and *φρην*, the mind), in allusion to its properties.

1. *E. officinális* L. (*common E.*); leaves ovate deeply toothed, corolla glabrous, lobes of the lower lip emarginate. *E. B.* t. 1416.

Pastures in the plains and on the moutpains, abundant. ☉. 5—9. — *Stem* varying from 1 inch, with often only a single flower, to 6 and 8 inches, in the Highland pastures, where it becomes very much branched. *Flowers* axillary, but crowded at the extremities of its branches, white or reddish, streaked with purple.

### 4. RHINÁNTHUS Linn. Yellow-rattle.

*Cal.* inflated, 4-toothed. Upper *lip* of the *cor.* compressed laterally, entire, furnished on both sides below the apex with a straight tooth-like appendage or lobe; lower one plane, 3-lobed. *Ovary* with many *ovules*. *Caps.* of 2 cells, obtuse, compressed. *Seeds* imbricated, flat and usually margined. — Named from *ῥιν* a nose, and *ανθος*, a flower; in allusion to the beaked upper lip of the corolla, which is very remarkable in the *R.*

1. *R. Crista-Gállí* L. (*common Y.*); leaves oblong-lanceolate

serrated, flowers in lax spikes, calyx glabrous, appendages of the upper lip of the corolla short roundish, bractæas ovate. *E. B. t. 657. R. glaber Lam. R. minor Ehrh.*

Meadows and pastures, abundant. ☉. 5—7. — *Stem* 1—2 ft. high, glabrous, often much branched and more or less spotted with purple. *Leaves* veiny, somewhat blunt or only acute. *Flowers* axillary in the upper leaves or bractæas, and hence loosely spiked. The appendages of the upper lip of the corolla are broader than long, bluish. Bractæas green throughout, acute, but not with an elongated point. When the fruit is ripe, the seeds rattle in the husky capsule, and indicate to the Swedish peasantry the season for gathering in their hay.

2. *R. \*máior Ehrh. (hairy Y.)*; leaves oblong-lanceolate serrated, flowers in crowded spikes, calyx hairy, appendages of the upper lip of the corolla ovate, bractæas ovate. *R. hirsutus Lam. R. villosus Pers. R. Crista-Galli var. β. L.*

Meadows and pastures. ☉. 7, 8. — Of this we have no British specimens. It is mentioned as a native of England by Mr. Benthams; but that Botanist refers to the figure in *E. B. S. t. 2737*, which we consider to belong without doubt to the next. The leaves of the present species are precisely as in the last: we have never seen it with the calyx glabrous. Although small specimens may occur, it is usually the largest and stoutest of the genus.

3. *R. angustifólius Gmel. (large bushy Y.)*; leaves linear-lanceolate, upper ones especially acuminate, flowers in crowded spikes, calyx glabrous, appendages of the upper lip of the corolla ovate or oblong, bractæas ovate acuminate. *R. máior Sm.; E. B. S. t. 2737.*

Corn-fields in the north of England. ☉. 7, 8. — Mr. Backhouse observes that the present plant has denser and more bushy spikes than *R. Crista-Galli*, and yellowish bractæas, each terminated by an elongated green point. The upper leaves are much acuminate from a lanceolate base. The appendages of the upper lip of the corolla are wedge-shaped, purple, usually longer than broad; the germen is narrower, and more tumid. The seeds are thick at the edge, with a membranous margin, which is variable in breadth, sometimes almost wanting.<sup>1</sup>

#### 5. MELAMPÝRUM Linn. Cow-wheat.

*Cal.* tubular, 4-toothed. Upper lip of the cor. laterally compressed, turned back at the margin; lower lip trifid. Ovary with 2 superposed ovules in each cell. Caps. oblong, 2-celled, obliquely acuminate, opening on one side. Cells 1—2-seeded. Seeds oblong, even, gibbous at the base. — Named from μέλας, black, and ῥυπός, wheat. Its seeds resemble grains of wheat, and are said, when mixed with flour, to make the bread black.

<sup>1</sup> Mr. Benthams observes to us, in a letter, that now, since it has been proved that this genus is parasitical, it is probable that all the supposed species ought to be united; an opinion in which we quite agree.

1. *M. cristatum* L. (*crested C.*); spikes densely imbricated 4-sided, bracteas cordate acuminate finely ciliato-dentate. *E. B.* t. 41.

Woods, thickets, and sometimes in corn-fields, chiefly in Norfolk, Cambridgeshire, Bedfordshire, and Huntingdonshire. ☉. 7. — A beautiful plant, as is the following. *Leaves* lanceolate, acuminate, entire. *Bracteas* rose-coloured at the base. *Flowers* yellow, purple within the upper lip, solitary in the axil of each bractea or floral-leaf, as in all the rest of the genus.

2. *M. arvense* L. (*purple C.*); spikes oblong lax, bracteas ovate-lanceolate attenuated pinnatifid with subulate segments, teeth of the calyx much longer than the tube, lips of the corolla closed. *E. B.* t. 53.

Corn-fields and dry gravelly banks, rare. Near Norwich. Isle of Wight. ☉. 6—8. — Spikes of *flowers* much larger than in the preceding, and exceedingly handsome, from the bright varied colours, yellow, purple, rose-colour, and green, of the blossoms and *bracteas*: the latter have elevated glandular points beneath. *Cal.* hispid, as long as the tube of the *corolla*.

3. *M. pratense* L. (*common yellow C.*); flowers axillary secund, leaves in distant pairs, corolla 4 times as long as the calyx closed, the lower lip straight. —  $\alpha$ . leaves glabrous, upper bracteas 1—2-toothed at the base. *E. B.* t. 113. —  $\beta$ . smaller and somewhat succulent, leaves glabrous, bracteas quite entire. *M. montanum* *Johnst. Fl. of Berw.* —  $\gamma$ . leaves hispid, bracteas with diverging and declining teeth at the base.

Groves and thickets (not in meadows, as the name would imply), frequent.  $\beta$ . Mountains.  $\gamma$ . Banks of the Wye below Monmouth. ☉. 5—8. — *Stem* 1 ft. or more high, slender, with straggling opposite branches. *Flowers* large, pale yellow: lower lip nearly straight (not deflexed), and the palate is raised so as to close the mouth of the tube.

4. *M. sylvaticum* L. (*lesser-flowered yellow C.*); flowers axillary secund, leaves in distant pairs, corolla scarcely twice as long as the calyx open, the lips equal in length, lower one deflexed, bracteas quite entire. *E. B.* t. 804.

Alpine woods. Rare in the north of England. More general, but very local in Scotland; in several parts of Perthshire; Auchindrane, woods on the Doune, Craigs of Ness, Ayrshire, &c. ☉. 7. — *Stem* 1 ft. high. *Bracteas* always entire. *Cor.* deep yellow, very small, quite unlike that of the preceding species.

#### 6. *PEDICULARIS* Linn. Louse-wort.

*Cal.* inflated, 5-cleft, or unequally 2—3-lobed, jagged, somewhat leafy. Upper lip of the *Cor.* laterally compressed, arched; lower one plane, 3-lobed. *Ovary* with many ovules. *Caps.* oblique, acute, compressed, 2-celled. *Seeds* angular. — Name derived from its supposed property of producing the lousy dis-

ease in sheep that feed upon it, a malady which rather arises from the wet pastures where such plants grow.

1. *P. palustris* L. (*Marsh L.*); stem solitary branched upwards erect, calyx broadly ovate hairy ribbed with crenated nearly equal lobes. *E. B.* t. 399.

Wet and marshy pastures. ☉. or 4? 5—9. — *Stem* 1 ft. high, with many lateral branches. *Leaves* some or all of them opposite, pinnate; *pinnae* ovate, almost pinnatifid. *Cal.* slightly hairy on the outside, nearly glabrous within, not inflated, spotted. *Cor.* crimson; upper lip with a projecting tooth on each side below the middle, truncated and with a tooth at the apex on each side, lower one fringed. The two *anterior stamens* hairy to near the base, hairs moniliform; two posterior ones glabrous.

2. *P. sylvatica* L. (*Pasture L.*); stem branched from the base and spreading, calyx oblong angular glabrous in 5 unequal crenate and almost leafy segments. *E. B.* t. 400.

Moist pastures and heaths, common. 4. 4—7. — *Stems* 3—5 inches long. *Leaves* alternate, lower ones pinnatifid, the rest pinnate with deeply serrated *pinnae*. *Cal.* quite glabrous on the outside, woolly within at the mouth, inflated, reticulated with green veins. *Cor.* rose-coloured (or white); upper lip without any projecting tooth about its middle, truncated and with a tooth at the apex on each side; lower one not fringed. The two *anterior stamens* have many moniliform hairs near the apex: two *posterior* ones glabrous or scabrous.

(*Mimulus luteus* W. is now naturalized in many boggy places.)

## 7. SCROPHULARIA Linn. Figwort.

*Cal.* 5-lobed (or in *S. vernalis* deeply 5-cleft). *Cor.* subglobose, its limb contracted with 2 short lips; the upper with 2 straight lobes, and frequently a small scale or abortive stamen within it; the lower 3-lobed, the two lateral lobes straight, middle one decurved. *Caps.* 2-celled, 2-valved, septicidal, the margins of the valves turned inwards. — Named from the *Scrofula*, the roots of some species resembling scrofulous tumours, which they were therefore in the dark ages of medical knowledge supposed to cure.

\* *Calyx* with 5 rounded lobes. *Cor.* purplish, the two upper lobes longer than the two lateral ones: upper lip with a scale.

1. *S. nodosa* L. (*knotted F.*); leaves cordate-triangular acute glabrous doubly and acutely serrate, lower serratures largest, stem with 4 acute angles, cymes lax, bracteas small lanceolate acute, sepals with a narrow membranous margin, scale of upper lip transversely oblong, slightly notched, root tuberous. *E. B.* t. 1544.

Woods and moist grounds, frequent. 4. 6—8. — *Root* large, thick and knotty. *Stem* 2—3 ft. high. *Flowers* greenish-purple.



# LEIE SCROPHULARIACÆE [ *Scrophularia*.

2. *S. Ehrharti* C. A. Stev. (*Ehrhart's F.*); leaves ovate-lanceolate acute subcordate glabrous sharply serrate, lower serratures smaller, petioles winged, stem 4-winged, cymes lax 4—8-flowered, sepals with a broad membranous margin, scale of upper lip bifid with diverging lobes, capsule obtuse, root fibrous. *E. B. t.* 2875.

**Wet places.** Wilmington, Sussex; Primrose Hill, Middlesex; Preston, Lancashire; Settle, Yorkshire. Berwick-upon-Tweed; Craigmend Bridge and Pentland Hills, near Edinburgh. *fl.* 7—9. — Stem 2—4 ft. high, decidedly winged at the angles, on which account the plant had been long supposed, both in Germany and Scotland, to be *S. aquatica*, although much more allied to *S. nodosa*. It does not appear to have been known to Mr. Benthham when he described the plants of this Order in De Candolle's *Prod.* in 1846; unless it be the glabrous form of *S. Scorodonia* observed by him in the Linn. herb. *Flowers* dark lurid purple.

3. *S. aquatica* L. (*Water F.*); glabrous, leaves crenate-serrate cordate-oblong obtuse, petioles winged, stem 4-winged, cymes dense corymbose 8—15-flowered, bractees linear-obtuse, sepals with a broad membranous margin, scale of upper lip roundish uniform entire, capsule pointed, root fibrous. *E. B. t.* 854.

Sides of rivers, and in wet places. *fl.* 6—9. — Stem 3—4 ft. high. *Panicles* terminal, bracteate, with remote branches. *Flowers* dark purple, occasionally white.

4. *S. Scorodonia* L. (*Balm-leaved F.*); downy, leaves cordate-triangular with large double serratures, stem bluntly 4-angled, cymes lax few-flowered, bractees leaflike, sepals with a membranaceous margin, scale of upper lip roundish entire. *E. B. t.* 2209.

Moist places, only in the extreme south and south-west of England, and at Tralee in Ireland. Jersey. *fl.* 7. — Distinguished from all the preceding by being downy, and by its wrinkled leaves, which have large teeth or serratures, and these are again serrated: it resembles *S. Ehrharti* in the leaves which accompany the panicle. *Flowers* dull purple.

\*\* *Calyx* with 5 deep, acute segments. *Cor.* yellow; the two upper segments of the cor. about equal to the two lateral ones; scale of the upper lip wanting.

5. *S. \*vernalis* L. (*yellow F.*); hairy, leaves broadly cordate doubly incise-serrate acute, cymes axillary corymbose, bractees leafy, sepals without a membranous margin, stamens protruded. *E. B. t.* 567.

Road-sides and waste places, in many parts of England and Scotland, but nowhere general, and always in doubtfully wild situations. *fl.* 4—6. — Very different from all the preceding, and, as Sir James E. Smith has well observed, exhibiting a great affinity with the pretty Peruvian genus *Calceolaria*. *Styles* and *stamens*, which latter

arise from the base of the yellow corolla, protruded from its very contracted mouth.

### 8. DIGITÁLIS Linn. Foxglove.

*Cal.* in 5 deep segments. *Cor.* campanulate, inflated beneath; *limb* obliquely 4—5-lobed, unequal. *Caps.* ovate, 2-celled, many-seeded, 2-valved, septicidal. — Name: *digitale*, the *finger of a glove*, which its flowers resemble. Hence, *Fox-glove* in English, and *doigts de la Vierge, gants de Notre Dame*, &c., in French, *meuran-uan-bau-sith*, in Gaelic.

1. *D. purpurea* L. (*purple F.*); sepals ovate-oblong acute 3-nerved downy, corolla obtuse scabrous externally, upper lip scarcely divided, lower one with ovate rounded segments, leaves ovate-lanceolate crenate or serrate downy. *E. B.* t. 1297.

Dry banks, pastures, walls, &c., in hilly and especially in sub-alpine and rocky countries; almost unknown in the more eastern parts of England, such as Norfolk and Suffolk. 4. 5—8. — The most stately and beautiful of our herbaceous plants; and one that has obtained great reputation as a medicine. Three to four feet high. *Leaves* large, veiny. *Spikes* very long, of numerous, drooping, purple (or rarely white), *flowers*, spotted within. Dr. Bromfield finds a curious *var.* with a spurred corolla, in the Isle of Wight.

### 9. ANTIRRHÍNUM Linn. Snapdragon.

*Cal.* 5-partite. *Cor.* personate, gibbous at the base (no evident spur); its *mouth* closed by a projecting palate. *Caps.* 2-celled, oblique, opening by 2—3 pores at the extremity. — Name: *arni*, in comparison with, *ρν*, a nose, *muffler*, or *mask*; from the appearance of the flowers.

1. *A. \*május* L. (*great S.*); leaves lanceolate alternate those of the branches opposite, flowers spiked, segments of the calyx ovate obtuse much shorter than the corolla, upper lip of corolla bifid. *E. B.* t. 129.

Old walls and chalk-hills, frequently the outcast of neighbouring gardens. 4. 7—9. — One to two feet high. *Flowers* very large, mostly purplish-red, but often varying to white.

2. *A. Oróntium* L. (*lesser S.*); leaves mostly alternate linear-lanceolate, spikes very few-flowered lax, segments of the calyx linear longer than the corolla. *E. B.* t. 1155.

Corn-fields in a dry soil, in many parts, especially of the east and south of England. ☉. 7—10. — *Flowers* purple, remarkable for the great length of the *calyx-segments*, particularly after flowering.

### 10. LINÁRIA Juss. Toadflax.

*Cal.* 5-partite. *Cor.* personate, spurred at the base; its *mouth* closed by a projecting palate. *Caps.* ventricose, 2-celled,

opening by valves or teeth.—Named from *Linum, flax*, which the leaves of some species resemble.

\* *Stems and branches trailing. Pedicels axillary, elongated.*

1. *L. \*Cymbalaria* Mill. (*Ivy-leaved T.*); leaves cordate 5-lobed palmate-nerved alternate glabrous, stems trailing. *Antirrhinum L.*: *E. B.* t. 502.

On old walls, in many places; the outcast of gardens.  $\varphi$ . 5—9. — *Stem* very long, filiform. *Leaves* petioled, often purple beneath. *Flowers* small, pale blue, or purplish.

2. *L. spúria* Mill. (*round-leaved T.*); leaves ovate downy feather-nerved mostly alternate, branches trailing, peduncles hairy, cor. with a subulate curved spur. *Antirrhinum L.*: *E. B.* t. 691.

Sandy corn-fields, mostly confined to the east and south-east of England. Abundant in many parts of Norfolk and Suffolk.  $\odot$ . 7—11. — *Flowers* small, yellowish; upper lip purple. *Cal.* large: segments ovate-lanceolate, the outer ones, sometimes all, cordate at the base.

3. *L. Elútime* Desf. (*sharp-pointed Fluellen, or T.*); leaves broadly hastate acute feather-nerved, lowermost ovate opposite, branches trailing hairy, peduncles glabrous, cor. with a subulate straight spur. *Antirrhinum L.*: *E. B.* t. 692.

Corn-fields in a dry, gravelly, or chalky soil, England.  $\odot$ . 7—11. — Similar to the last, yet distinct, smaller in all its parts. *Sepals* lanceolate, very acute, never cordate.

\*\* *Stems erect, descending or diffuse.*

4. *L. répens* Ait. (*creeping pale-blue T.*); glabrous, leaves linear whorled or scattered, flowers racemose, sepals lanceolate glabrous the length of the spur but shorter than the capsule, seeds angular transversely wrinkled, stems erect. *Antirrhinum L.*: *E. B.* t. 1253. *Lin. striata DC.*

Chalky banks and rocky places near the sea, rare; principally in the south of England, South Wales, and Ireland. Naturalized near Colzean, Ayrshire, and Musselburgh, Scotland.  $\varphi$ . 7—9. — *Stems* 1 to 1½ foot high, slender, branched. *Leaves* somewhat whorled below, but there soon dying away. *Flowers* in paniced racemes, whitish or pale violet, with darker violet lines; *palate* yellow. (Between this and the next species hybrids are occasionally formed, in Hants, Cornwall, and Cork, some partaking more of the one parent, others more of the other: those which have the seeds of the next, yellow flowers, and intermediate sepals, have been called *L. Bauhini* and *L. Italica* by British collectors; those with striped flowers are *L. septium* Allm. The true *L. Italica* is itself connected with *L. repens* by several intermediate forms.)

5. *L. vulgáris* Mönch (*yellow T.*); glabrous, leaves linear-lanceolate scattered crowded, flowers racemose imbricated, sepals

ovate acute glabrous shorter than the capsule or spur, seeds tubercular-scabrous surrounded by a smooth wing, stems erect. Antirrhinum *Linaria* L.: *E. B.* t. 658.

Borders of corn-fields, and in hedges, abundant. 4. 7—10.— One to two feet high, glaucous. *Flowers* large, yellow. *Rachis* and *peduncles* usually glandular-hairy, sometimes glabrous. Dr. Bromfield finds a variety with broad leaves in the Isle of Wight, which appears to be the *L. speciosa* Ten. A remarkable but not very uncommon monstrosity is the "*Peloria* var." (figured in *E. B.* t. 260), having 5 spurs and 5 usually imperfect stamens.

6. *L. Pelisseriána* DC. (*upright purple T.*); glabrous erect, leaves linear upper ones alternate, lower ones verticillate, those of the sterile shoots ternate and broader, flowers at first in short racemes, pedicels as long as the bracteas, sepals linear acute twice as long as the capsule much shorter than the spur of the corolla, seeds nearly flat surrounded by a fringed wing, tuberculated on one side, smooth on the other. *E. B. S.* t. 2832.

On a hill-side, growing amongst *Ulex Europæus*, between St. Peter's barracks and a water-mill near St. Ouen's Pond, Jersey. ☉. 6. — *Flowering-stems* 6 inches to a foot high, nearly simple, one or more from each root. *Flowers* purple, with darker veins. The *seeds* are a beautiful microscopic object.

7. *L. \*supina* Desf. (*diffuse T.*); diffuse or ascending inflorescence glandular-hairy otherwise glabrous, leaves linear blunt, upper ones alternate, lower verticillate, sepals linear or linear-spathulate shorter than the capsule or spur about as long as the corolla, seeds nearly flat surrounded by a striated wing.— Antirrhinum L.: *L. maritima* DC. *L. Pyrenaica* DC.

Near Plymouth, Devon, and Poole, Dorset (supposed to have been brought with ballast from Rouen). Newcastle upon Tyne (among ballast). Hayle and St. Blaize bay, Cornwall (perhaps also introduced). 4. 7, 8.—*Stem* much branched at the base, only a few inches high. *Flowers* at first in short racemes, yellow, the throat and spur usually with purple lines. We have not seen British specimens.

8. *L. minor* Desf. (*least T.*); leaves linear-lanceolate obtuse mostly alternate glandular pubescent, flowers solitary axillary, pedicels three times as long as the calyx which is longer than the spur, segments of the upper lip of the corolla diverging, seeds oblong furrowed, stem erect much branched. *E. B.* t. 2014.

Sandy fields, principally in the eastern and south-eastern parts of England. Rare in Scotland; near Glasgow; Aill Water, Roxburghshire. At Sunday's Well in Ireland. ☉. 5—10.—*Stems* 4—10 inches high, with small purplish-yellow *flowers*.

(The Neapolitan *Linaria purpurea* Mill. (*Bot. Mag.* t. 99) is given in the *New Bot. Guide* as being found at Redland, near Bristol, by Miss Worsley. Of course it is the outcast of a garden.)

## 11. LIMOSÉLLA Linn. Mudwort.

*Cal.* campanulate, 5-cleft, equal. *Cor.* shortly 5-cleft, campanulate, equal. *Stam.* 4, nearly equal. *Anthers* 1-celled. *Stigma* capitate. *Caps.* globose, 2-valved, with a central placenta which is free or connected below with a thin dissepiment, ultimately 1-celled. — Named from *limus*, mud, the plant growing in muddy places.

1. *L. aquática* L. (common *M.*); leaves lanceolate spathulate on long stalks, segments of the corolla oval-oblong much shorter than the tube of the calyx. *E. B.* t. 357.

Muddy places, and where water has stood, in several parts of England, Scotland, and Ireland, but often overlooked on account of its small size. ☉. 7—9.—*Root* creeping, filiform, throwing up clusters of glabrous leaves one or two inches long including their petiole. *Flowers* minute, peduncled, arising from the base of the leaf-stalks, resembling scapes which are shorter than the petioles. *Cor.* pale rose-coloured. *Anthers* purplish-blue. *Seeds* with a furrow on the back and numerous transverse striæ.

## 12. SIBTHÓRPIA Linn. Sibthorpia. Money-wort.

*Cal.* in 4—8 deep spreading segments. *Cor.* sub-rotate, of as many segments as the calyx or with an additional one. *Stam.* as many as the segments of the corolla, or one fewer. *Anthers* sagittate, 2-celled. *Stigma* dilated. *Caps.* membranaceous, compressed, 2-celled, 2-valved, loculicidal. — Name given in honour of *Dr. Humphrey Sibthorpe*, the successor of Dillenius in the botanical chair at Oxford. (As here defined, the genus includes *Disandra* Linn.)

1. *S. Europæa* L. (creeping *S.*, or Cornish *M.*); hairy, leaves 7—9-lobed, pedicels very short, flowers minute 5-cleft, stamens 4, capsules broad retuse. *E. B.* t. 649.

Moist shady places, in Devonshire, Cornwall, and the Scilly Isles. By the stream running from Waldron Down, Sussex; near Nettlecombe, Somerset. Jersey and Guernsey. At Connor hill near Dingle; and near Brandon, Ireland. 4. 7, 8.—A graceful little plant, hairy, with creeping filiform stems, and alternate orbicular-reniform broadly crenate leaves. *Flowers* axillary, solitary, on short stalks; the two lowermost segments of the corolla yellowish, the three upper broader and pink.

## C. Stamens 5. (Gen. 13.)

## 13. VERBÁSCUM Linn. Mullein.

*Cal.* 5-partite. *Cor.* rotate, irregular. *Stam.* 5, the three upper or all of them hairy. *Caps.* of 2 cells and 2 valves, septicidal. — Name altered from *Barbascum*, from *barba*, a beard; in allusion to the shaggy nature of its foliage.

\* *Anthers of the longer glabrous stamens decumbent on one side on the filaments. Raceme spiked, dense, nearly sessile. Leaves decurrent, woolly.*

1. *V. Thápsus* L. (*great M.*); stem simple, leaves all decurrent woolly on both sides, spike of flowers very dense, pedicels shorter than the calyx, corolla concave in the throat about twice as long as the calyx, 2 stamens longer glabrous their anthers very shortly decurrent. *E. B. t. 549.*

Banks and waste grounds, in a light sandy, gravelly, or chalky soil. ♂. 6—8. — *Stem* nearly simple, 4—5 feet high, angular, winged. *Leaves* thick, excessively woolly, ovate or oblong. *Spike* long, cylindrical. *Flowers* handsome, golden-yellow; when dried in the sun, giving out a fatty matter used in Alsace as a cataplasm in hæmorrhoidal complaints. Three of the *stamens* with white woolly hairs; the two longer ones glabrous.

2. *V. \*thapsiförme* Schrad. (*Thapsus-like M.*); stem simple, leaves decurrent woolly on both sides, raceme spiked dense, 2 stamens longer glabrous their anthers much decurrent, corolla flat about 4 times as long as the calyx. *V. thapsoides* Huds. ? *V. Thapsus* Mey. Koch.

Everywhere in Kent; *Huds.* ♂. 7, 8. — The foreign plant is closely allied to the last, but readily distinguished by the corolla and anthers of the long stamens. As to the British species it rests wholly on Hudson's authority, and Mr. Griffith states that the *V. thapsoides* Huds. has frequently been produced in his garden by the pollen of *V. Thapsus* falling upon the stigma of *V. Lychnitis* (Bot. Guide i. p. 169.)

\*\* *Anthers of the longer stamens more or less decurrent on one side on the filaments which are hairy on the inside. Flowers solitary, or 2—6 together. Leaves glabrous or glandular-hairy, sessile; upper ones semiamplexicaul or slightly decurrent.*

3. *V. \*Blattária* L. (*Moth M.*); leaves crenate oblong glabrous, radical ones sinuate, upper ones acuminate, flowers solitary stalked remote collected into an elongated branched glandular-hairy raceme, pedicels much longer than the calyx. *E. B. t. 393.*

Banks in a gravelly soil, rare. In several places in Kent, Devonshire and Cornwall. ○. 6—10. — *Hairs of the filaments* purple.

4. *V. virgátum* With. (*large-flowered Primrose-leaved M.*); slightly glandular hairy except the sometimes glabrous leaves, leaves ovate-lanceolate toothed, radical ones sinuate-lyrate, pedicels 2—6 or rarely solitary mostly shorter than the calyx. *E. B. t. 550.*

Fields and by road-sides, rare. Torpoint, Cornwall; Plymouth; Surrey; Worcester; Lincoln; Wombourne, Staffordshire; Herts; Norfolk; Shropshire; Hereford; Wrexham, Denbighshire; Glamor-

ganshire. ♂. 8. — Perhaps, as suggested by Mr. Bentham, a mere var. of the last.

\*\*\* *Anthers not decurrent on the filaments, which are equal and all woolly. Racemes branched, paniced. Leaves woolly or pulverulent especially beneath, not decurrent.*

5. *V. pulverulentum* Vill. (*yellow hoary M.*); leaves ovate-oblong subserrate pulverulento-tomentose on both sides, lower ones oblong-elliptical attenuated into a stalk, upper ones sessile or cordato-amplexicaul, stem rounded paniced above with spreading branches, filaments all woolly (with white hairs). *E. B. t. 487. V. floccosum W. et K.*

Road-sides on a gravelly or chalky soil; frequent in Norfolk, Suffolk, Surrey, and Hants. Den near Cullen, Scotland. ♂. 7. — Remarkable for the mealy down on the leaves, which is easily removed from the surface. *Flowers* large, handsome. "If the plant be struck suddenly and violently, the expanded corollas will in a short time fall off, and the calyx will close over the germen." (*Sm.*) This is certainly the *V. floccosum* of Waldstein and Kitaibel Fl. Hung. t. 81: there were doubts at one time about its being the plant of Villars, from hybrids being generally preserved under that name, and probably sometimes mistaken for it by Villars himself; but, as observed by Mr. Bentham, the description of Villars indicates the English plant.

6. *V. Lychnitis* L. (*white M.*); leaves crenate nearly glabrous above woolly and pulverulent beneath, lower ones elliptic-oblong wedge-shaped stalked, upper sessile ovate-acuminate with a rounded base, stem angular and paniced with ascending branches, filaments all woolly (with white hairs). *E. B. t. 58.*

Road-sides, pastures, and fields, especially in a chalky soil. On clayslate near Truro. ♂. 7, 8.—*Flowers* numerous, rather small, cream-coloured (often yellow in the Isle of Wight). *Leaves* very woolly below. *Stamens* hairy.

7. *V. nigrum* L. (*dark M.*); leaves crenate nearly glabrous above tomentose or pubescent beneath, lower ones cordate-oblong on long stalks, upper cordate-ovate subsessile, raceme elongated, pedicels twice as long as the calyx, sepals lanceolate-subulate, stem angular above, filaments all woolly (with bright purple hairs). *E. B. t. 59.*

Banks and way-sides, particularly in a gravelly or chalky soil, in the middle and south of England (only naturalized in the north of England and Scotland). ♀. 6—10.—*Leaves* nearly glabrous, dark green. *Flowers* fascicled, many together, on the almost simple long raceme. *Corolla* rather large, yellow.

(Besides the above, *V. phaniceum* L. (*V. ferrugineum* Andr.) and *V. phlomoides* L. have been mentioned as natives, but they are plants only of a more southern clime.)

ORD. LXIII. LABIATÆ Juss.

*Calyx* tubular. *Corolla* monopetalous, hypogynous, mostly irregular. *Stamens* 4, mostly didynamous, 2 sometimes sterile or wanting. *Ovary* 1, deeply 4-lobed; *style* arising from between the lobes, near their base. *Stigma* 2-lobed. *Achenes* 4; enclosed in the calyx. *Seed* solitary, erect. *Embryo* erect. *Albumen* 0. — Leaves *opposite*. Stems *square*. — An extensive and eminently natural Order, abounding in essential oil, camphor, and bitter extractive: many of the individuals are therefore employed medicinally.

A. *Stamens* 2.

1. LYCOPUS. Cal. 5-cleft. Limb of corolla nearly equal.
2. SALVIA. Cal. 2-lipped. Cor. labiate.

B. *Stamens* 4.

- I. *Stamens* diverging, nearly equal, longer than the nearly regular 4—5-cleft cor.

3. MENTHA. Tube of the cor. scarcely longer than the calyx.

- II. *Stamens* diverging, nearly equal, longer than the somewhat 2-lipped cor.

4. THYMUS. Flowers in whorls or capitate.

5. ORIGANUM. Flowers in spikes or heads, with imbricated bractæa.

- III. *Stamens* ascending, parallel, didynamous. Cor. irregular; upper lip short or nearly wanting, shorter than the stamens.

6. TEUCRIUM. Cal. tubular, 5-toothed. Upper lip of cor. bipartite.

7. AJUGA. Cal. ovate, 5-cleft. Upper lip of cor. entire or emarginate.

- IV. *Stamens* didynamous. Cor. obviously 2-lipped; upper lip longer than the stamens.

\* Cal. equal or oblique, 9—10-toothed, not obviously 2-lipped.

† *Stamens* longer than the tube of the cor.

‡ The two anterior or lower stamens the longest.

8. BALLOTA. Cal. salver-shaped, 10-ribbed. Anther-cells spreading.

9. LEONURUS. Cal. tubular, 5—10-ribbed. Anther-cells nearly parallel.

10. GALEOPSIS. Cal. campanulate. Anther-cells opposite, bursting transversely by two valves.

11. GALEOBOLON. Cal. campanulate. Anthers glabrous; the cells diverging, bursting longitudinally. Lobes of lower lip of the cor. about equal. Achenes truncated.

12. LAMTUM. Cal. campanulate. Anthers hirsute; the cells diverging, bursting longitudinally. Lateral lobes of lower lip of cor. obsolete or toothlike, middle one bifid. Achenes truncated.



13. *BETONICA*. Cal. ovate. Anther-cells parallel, bursting longitudinally. Middle lobe of lower lip of cor. nearly entire, longer than the lateral spreading lobes.

14. *STACHYS*. Cal. campanulate. Anther-cells diverging, bursting longitudinally. Middle lobe of lower lip of cor. nearly entire, larger than the lateral reflexed lobes.

†† *The two posterior or upper stamens the longest. Cal. 15-ribbed.*

15. *NEPETA*. Upper lip of the cor. straight, emarginate or bifid.

†† *Stamens included within the tube of the cor.*

16. *MARRUBIUM*. The two anterior or lower stamens the longest.

\*\* *Cal. obviously 2-lipped.*

† *Stamens diverging.*

17. *CALAMINTHA*. Upper lip of the cor. straight, nearly flat; tube straight.

17a. *MELISSA*. Upper lip of the cor. concave; tube curved upwards.

†† *Stamens ascending, parallel.*

18. *MELITTIS*. Cal. campanulate, veined, spreading in front.

19. *PRUNELLA*. Cal. ovate, closed in fruit; upper lip 8-toothed, lower bifid.

20. *SCUTELLARIA*. Cal. ovate, closed in fruit; lips entire, upper one with a concave scale at the back.

### A. *Stamens 2.* (Gen. 1, 2.)

#### 1. *LYCOPUS* Linn. Gipsy-wort.

*Cal.* tubular, 5-cleft. *Cor.* tubular; *limb* nearly equal, 4-cleft, upper segments broader and notched. *Stam.* 2, diverging, simple, with sometimes 2 sterile ones.—Name: from *λυκος*, a *wolf*, and *πους*, a *foot*; from a fancied resemblance in the cut leaves of this plant to a wolf's paw, *der Wolfsfuss*, in Germ.,—in English, *Gipsy-wort*, because the plant yields a black dye which is employed by gipsies to render their skins darker.

1. *L. Europæus* L. (*common G.*); leaves deeply and irregularly pinnatifid-serrate, rudiments of the sterile stamens minute, achenes about as long as the calyx-tube. *E. B.* t. 1105.

Ditches and river-banks; less frequent in Scotland. *4.* 6—9.—*Stems* 2 ft. high. *Leaves* opposite, nearly sessile, ovate-lanceolate, wrinkled, very deeply sinuate-serrate, almost pinnatifid. *Flowers* small, sessile, in dense whorls at the base of the superior leaves, whitish with purple dots, hairy within.

#### 2. *SALVIA* Linn. Sage or Clary.

*Cal.* 2-lipped, tubular. *Cor.* labiate; the *tube* dilated upwards and compressed. *Stam.* 2. *Filaments* with 2 divaricating branches, 1 only bearing a perfect, single cell of an *anther*.

— Named from *salvo*, to *save*, or *heal*, in allusion to its balmy or healing qualities.

1. \**S. pratensis* L. (*Meadow C.*, or *S.*); root-leaves oblong ovate-cordate at the base irregularly crenate stalked, those of the stem few sessile, uppermost lanceolate acuminate, bracteas cordate-ovate acuminate shorter than the calyx, corolla thrice as long as the calyx glandular and viscid at the summit. *E. B.* t. 153.

Dry meadows and about hedges, England, rare: near Cobham in Kent. 4. 6, 7.—*Stem* varying from 6 inches to 2 feet high.

2. *S. Verbenaca* L. (*wild English C.*, or *S.*); leaves broadly ovate or oblong crenate, lower ones long-stalked, upper ones broader sessile semiamplexicaul, bracteas cordate-ovate acuminate about as long as the calyx, tube of the corolla much narrower and scarcely longer than the calyx. *E. B.* t. 154.

Dry pastures and banks, especially in a chalky or gravelly soil; not uncommon in England, but in Scotland only found about Edinburgh. 4. 5—8. — *Stems* one to two feet high. *Lower leaves* petiolate, ovate, scarcely cordate at the base; upper ones sessile and acute, less lobed, but more serrated; all wrinkled with veins. *Bracteas* 2 under each whorl of flowers, cordate, acute, entire, ciliated. *Cal.* hairy, segments mucronate. *Cor.* small in proportion to the calyx, purple. *Upper lip* concave, compressed.

3. *S. clandestina* L. (*small-flowered S.*); leaves ovate-oblong incise-toothed or pinnatifid, lower ones stalked, upper oblong acute sessile scarcely cordate or amplexicaul, bracteas cordate-ovate acuminate slightly shorter than the calyx, tube of the corolla longer than the calyx. *S. obtusata* Link. *S. præcox* Savi.

Dry gravelly banks, rare. Lizard Point, Cornwall. 4. 7. — We have not seen English specimens: the foreign plant is a very variable one, but usually with deeply toothed or pinnatifid leaves, and appears to be the southern form or representative of *S. Verbenaca*, to which also several other supposed species may be conveniently referred. In the *Flora Sarnica* Mr. Babington has stated it to be a native of the Channel Islands, but as he omits the locality in his *Manual*, the plant intended is probably now united by him to *S. Verbenaca*.

B. *Stamens* 4. (Gen. 3—20.)

Tribe I. MENTHOIDEÆ. *Tube of the cor. scarcely longer than the cal., its limb 4—5-cleft, nearly regular. Stam. diverging upwards.* (Gen. 3.)

3. MENTHA Linn. Mint.

*Cal.* equal, 5-toothed; its *mouth* naked or rarely villous. *Cor.* nearly regular, 4-cleft; its *tube* very short. *Stam.* diverging,

# LXIII. LABIATÆ.

exserted or included. *Anther-cells parallel.*—Name: *μυρρα* or *myrra*, an ancient Greek term.

\* *Throat of the cal. naked. Inflorescence terminating the stems. Upper or all the whorls approximated into spikes or in terminal heads.*

† *Leaves sessile or the lower ones only stalked.*

1. *M. sylvestris* L. (*Horse M.*); leaves subsessile ovate elliptical or lanceolate sometimes subcordate at the base serrate, downy hoary beneath, spikes almost cylindrical scarcely interrupted, bractæas subulate, calyx very hairy, its teeth acuminate.—*α.* leaves lanceolate. *E. B. t. 686.*—*β.* leaves elliptical. *M. rotundifolia* Sole.

Moist waste ground: not uncommon in England. Sidlaw Hills, Forfarshire. Ireland. *γ.* 8, 9.—Partial bractæas sometimes much longer than the flowers and far more conspicuous than in the figure in *E. B.* There is a variety with somewhat wrinkled and crisped leaves, which passes into our *β.*: it however can scarcely be *M. crispa* *E. B. S. t. 2785*, which seems, from the figure, more allied to *M. aquatica*.

2. *M. rotundifolia* L. (*round-leaved M.*); leaves sessile elliptical obtuse sharply serrated wrinkled downy shaggy beneath, spikes interrupted, bractæas lanceolate, calyx somewhat hairy, its teeth short and acute. *E. B. t. 446.*

Moist places, in waste ground; not unfrequent in many parts of England. Anglesea; and near Auchindenny, Scotland; but scarcely wild. Near Cove, Ireland. *γ.* 8, 9.

3. *M. \*viridis* L. (*Spear M.*); leaves lanceolate acute glabrous serrated sessile, spikes cylindrical interrupted, bractæas subulate, calyx-teeth linear-setaceous. *E. B. t. 2424.*—*β.* *crispa* Benth. (*δ Sm.*)

Marshy places, in many parts of England, according to Smith. Cairnhill, near Edinburgh.—*β.* Glen Farg, Perth, along with *M. viridis α.* and *M. piperita*. *γ.* 8.—Mr. Bentham remarks that the bractæas and the calyx are either glabrous or hairy: the pedicels seem to be always glabrous. Cultivated for culinary purposes, being aromatic and pungent.

†† *Leaves stalked.*

4. *M. piperita* Sm. (*Pepper M.*); leaves ovate-lanceolate or oblong strongly serrated acute slightly hairy stalked, upper ones smaller, spikes lax short obtuse interrupted below, bractæas lanceolate, calyx tubular with lanceolate subulate teeth quite glabrous at the base. *E. B. t. 687.*—*β.* *sylvestris* (Sole), leaves ovate-rounded and almost cordate at the base, spikes elongated.

\* Watery places, in many parts of England, but often escaped from gardens. Alford, Aberdeenshire; North Queensferry. *γ.* 8, 9.—

Much cultivated for the sake of its essential oil, which resides in minute glands conspicuous on the leaves and especially on the cal. Mr. W. Wilson finds a var. near Warrington, in which these glands are not visible even with a microscope: "its odour is sweet and mild, without the pungency of the common sort cultivated in gardens."

5. *M. aquatica* L. (*Water capitate M.*); leaves ovate serrated stalked founded or slightly cordate at the base, uppermost ones bracteiform and shorter than the flowers, flowers dense in terminal obtuse heads or spikes and sometimes also in remote axillary whorls, calyx tubular, its teeth triangular-subulate. — *a.* leaves pubescent, calyx and pedicels hairy. *M. hirsuta* L.: *E. B. t.* 447. — *β.* leaves incise-toothed and crisped. *M. crispa* *E. B. S. t.* 2785? — *γ.* leaves, calyx, and pedicels quite glabrous. *M. citrata* Ehrh. *M. odorata* Sole: *E. B. t.* 1025.<sup>1</sup>

Banks of rivers and marshes, frequent. — *β.*? Northumberland, and near Audley-End, Essex. — *γ.* Cheshire, and near Bedford in N. Wales. *γ.* 8, 9. — Of the var. *γ.* we have only seen garden specimens: it is quite glabrous and has the smell of the *Bergamot-orange* or the herbage of *Monarda didyma*, whence it is called the *Bergamot-mint*. We refer *M. crispa* *E. B. S.* here, on the authority of Mr. Bentham; but the flowers are not sufficiently capitate, although the spike be shorter than in *M. piperita*; Mr. Babington refers it to *M. sylvestris*: as, however, all the crisped-leaved forms of *Mint* are monstrosities, the species from which they are derived can scarcely be determined by the usual characters.

\* \* Throat of the cal. naked. Inflorescence indeterminate, flowers in axillary distant whorls, none among the uppermost leaves (or much shorter than they).

† Leaves stalked.

6. *M. sativa* L. (*Marsh whorled M.*); leaves stalked elliptical ovate or ovate-lanceolate serrate, upper ones similar but smaller all longer than the distant dense whorls, calyx with lanceolate acuminate teeth. *M. arvensis*, var. *Benth.* — *a.* whole plant more or less hairy, calyx and pedicels hairy. *E. B. t.* 448. — *M. acutifolia* Sm.: *E. B. t.* 2415. — *β.* whole plant nearly glabrous, pedicels and lower part of the calyx quite glabrous. *M. rubra* Sm.: *E. B. t.* 1413.

Wet places, banks of rivers, and in hedges and thickets. 7, 8. — Mr. Bentham unites this to the next; and the only difference is in the form of the teeth of the calyx. The present is never, we believe, found in corn-fields, while genuine specimens of the other are almost confined to them or gardens; but *M. gentilis* L. has the calyx and

<sup>1</sup> Nearly all the species of this genus are hairy with serrated leaves, but are subject to two principal variations, viz.: — to be almost entirely glabrous, in which case the pedicels and lower part of the calyx become quite glabrous, and the odour of the species is milder and even pleasant; — and to have the leaves cut and crisped. This latter is more strictly a monstrosity, and is sometimes accompanied with a considerable change in the inflorescence.

large upper leaves of *M. arvensis*, while it is almost glabrous like *M. rubra* Sm., and grows in wet places, thus seeming to connect the two. What is called *M. acutifolia* rests on a solitary specimen, not in the normal state, in so far as the stem is terminated by flowers; but as this may be the result of accident, the uppermost leaves being large, we follow Mr. Bentham in referring it here.

7. *M. arvensis* L. (*Corn M.*); leaves stalked ovate or elliptical sometimes cordate at the base serrate, upper ones similar and equally large all longer than the distant whorls, calyx campanulate, its teeth triangular acute about as broad as long. —  $\alpha$ . hairy, leaves narrowed at the base, calyx clothed all over with spreading hairs. *E. B. t.* 2119. —  $\beta$ . hairy, leaves somewhat cordate rugose, calyx clothed all over with spreading hairs. *M. agrestis* Sole: *E. B. t.* 2120. —  $\gamma$ .? more glabrous, upper part of the calyx clothed with erect hairs, lower part and pedicels glabrous. *M. gentilis* *E. B. t.* 2118.

$\alpha$ . Corn-fields, common. —  $\beta$ . corn-fields and neglected gardens; Somersetshire; plentiful in Sussex. —  $\gamma$ . watery places, rare. Holt in Norfolk; Somershire; river-side above Warrington. N. Wales.  $\gamma$ . 8, 9. — The smell of the common variety has been compared to that of decayed cheese.

†† *Leaves nearly sessile.*

8. *M. \*pratensis* Sole (*narrow-leaved M.*); leaves nearly sessile ovate-lanceolate acute serrate, upper ones similar all longer than the distant subglobose whorls, calyx campanulate, lower part and pedicels glabrous, teeth triangular acute hairy. *M. gentilis* Sole: *E. B. t.* 449. *M. gracilis* Sm.

Watery places in moist meadows (Sm.).  $\gamma$ . 8, 9. — Stem and leaves usually glabrous. Leaves paler beneath and the calyx glandular. With this we are not acquainted. Sole doubts if it be indigenous. Mr. Bentham remarks that it is intermediate between *M. viridis* and *M. sativa* var.  $\beta$ , having the inflorescence of the present section and the nearly sessile leaves of *M. viridis*.

\*\*\* *Throat of the calyx closed with hairs. Flowers in axillary distant whorls, none among the uppermost leaves.*

9. *M. Pulégium* L. (*Penny-royal*); flowers whorled, leaves ovate downy obtuse subcrenate, stem prostrate, flower-stalks slightly and calyx very pubescent, teeth of the latter fringed. *E. B. t.* 1026.

Wet commons and margins of brooks; England and S. of Ireland. Rare in Scotland and scarcely indigenous.  $\gamma$ . 8, 9. — The smallest of the genus, readily known by its prostrate stems, and small, frequently recurved leaves, both of which are thickly covered with short hairs, and especially by the hairy throat of the calyx. Smell powerful. Much used medicinally.

Tribe II. SATURINEÆ. *Corolla* two-lipped, the tube about as long as the calyx; lips nearly equal in length, upper one nearly plane. *Stam.* diverging, nearly equal, protruded. (Gen. 4, 5.)

4. THÝMUS Linn. Thyme.

*Flowers* whorled or capitate. *Cal.* with 10—13 ribs, tubular, 2-lipped; upper lip 3-toothed, lower one bifid; the throat hairy. *Cor.* with the upper lip erect, nearly plane; lower patent and trifid. *Stamens* diverging. *Anther-cells* at first nearly parallel, afterwards diverging; *connectivum* subtriangular. — Name: *ῥῦμος*, strength; from its balsamic odour strengthening the animal spirits.

1. *T. Serpyllum* L. (*wild T.*); flowers capitate, stems branched decumbent, leaves plane ovate obtuse entire petiolate more or less ciliated at the base, floral-leaves similar, teeth of the upper lip of the calyx ovate-lanceolate of the lower subulate ciliated, upper lip of the corolla notched ovate-quadrangular. *E. B. t.* 1514. — *β.* leaves hairy or hoary.

Hills and dry pastures, abundant. *℥.* 6—8. — Variable in size, and in the hairiness and scent of its foliage, which is sometimes all over hoary, and smells like lemon. *Flowers* purple.

(The other Linnæan species of *Thymus* are referred to *Calamintha*.)

5. ORÍGANUM Linn. Marjoram.

*Spikes* (or *heads*) of *flowers* somewhat 4-sided, resembling a *catkin*, imbricated with *bracteas*. *Cal.* equally 5-toothed (or 2-lipped). *Cor.* with the upper lip erect, nearly plane; lower one patent, trifid. *Stamens* diverging, *connectivum* subtriangular. — Name: *ορος*, a hill, and *ῥαμος*, joy; from the dry hilly places of which the species are the ornament.

1. *O. vulgare* L. (*common M.*); heads of flowers roundish paniced crowded, bracteas ovate longer than the calyx, calyx equally 5-toothed, hairy in the throat, leaves stalked broadly ovate obtuse entire or toothed. *E. B. t.* 1148.

Dry hilly and bushy places, not unfrequent. *℥.* 7—9. — *Stems* 1 foot high. *Flowers* purple; *bracteas* tinged with the same colour. *Fragrant* and aromatic.

“The Thyme strong-scented ‘neath one’s feet,  
And Marjoram so doubly sweet.”—*Clare*.

(*Origanum Onites* L., or *Pot Marjoram*, is mentioned in Ray’s *Synopsis*, p. 236, as having been found by Mr. Dale “on the left hand of the road from Braintree to Raine (Essex), beyond the bridge;” but it cannot be indigenous there, being entirely a Mediterranean plant:

the calyx is cleft in front; its upper lip is large and orbicular, lower nearly wanting.)

Tribe III. AJUGOIDÆ. *Corolla irregular; upper lip abbreviated or apparently wanting. Stamens much exerted, didynamous, parallel, ascending; the two lower ones the longest.* (Gen. 6, 7.)

#### 6. *TEUCRIUM* Linn. Germander.

*Cal.* tubular, 5-toothed, nearly equal or 2-lipped. *Cor.* with the upper lip bipartite; lower one patent, 3-rid. *Stam.* much exerted. *Cells* of the anthers confluent, spreading. — Named from *Teucer*, Prince of Troy, who is said to have first employed this plant medicinally.

1. *T. Scorodonia* L. (*Wood G.*); leaves oblong-ovate cordate at the base petiolate downy crenate green on both sides, floral ones small about the length of the pedicels, flowers in lateral and terminal one-sided racemes, calyx sub-bilabiate, upper lip ovate entire lower 4-toothed, tube of the corolla exerted, stem erect. *E. B. t.* 1543.

Woods and dry stony places, frequent. *Æ.* 7, 8. — *Stems* 1—2 ft. high. *Leaves* very much wrinkled. *Flowers* yellowish-white. *Stam.* purplish-red. The plant is extremely bitter, and has been sometimes substituted for hops.

2. *T. Scordium* L. (*Water G.*); herbaceous perennial procumbent at the base villous rarely glabrous, leaves oblong or ovate-oblong toothed sessile green on both sides, floral ones similar, whorls axillary 2—6-flowered, calyces declinate campanulate gibbous at the base on the under-side, their teeth short nearly equal. — *α.* leaves narrow or rounded at the base. *T. palustre* Lam. — *β.* leaves shorter cordate-amplexicaul at the base. *E. B. t.* 828. *T. scordioides* Schreb.

Low wet meadows, rare. Near the bridge of Portumna, county Tipperary, Ireland. Oxfordshire and Cambridgeshire. *Æ.* 7, 8. — The var. *α.* is the plant of Linnæus; but Mr. D. Moore (in the *Phyt.* ii. p. 129.) has proved the two supposed species to be the results of situation. "When growing in deep water, the plant is almost quite glabrous, except a few long hairs about the stem, and the leaves are cordate-amplexicaul obtusely crenate and bluntly oblong; when found on dry ground or in shallow water, but especially when growing among the loose stones where it is only covered with water during winter or by occasional floods, the whole plant is very hairy, with the leaves remarkably attenuated at the base, almost stalked." Foreign specimens of var. *β.* from the south of Europe are however more villous than *α.*, the result also of situation.

3. *T. \*Bótrys* L. (*cut-leaved annual G.*); annual erect vil-

lous, leaves pinnatifid, segments oblong quite entire or incise divaricate green on both sides, floral leaves similar, whorls axillary 6-flowered, calyces gibbous at the base on the under-side inflated tubular, the teeth lanceolate equal.

Rare. In a stony and steep valley, facing the south, near the end of Boxhill farthest from Burford Bridge. ☉. 8.

4. T. \* *Chamædryas* L. (*Wall G.*); leaves ovate inciso-serrate wedge-shaped and entire at the base green on both sides, floral leaves smaller nearly entire, whorls of 2—6 flowers, upper ones racemose, calyces declinate campanulate, their teeth lanceolate-acuminate nearly equal, flowers axillary, stem ascending. *E. B.* t. 680.

Borders of fields and mostly ruined walls; Winchelsea Castle, Sussex; Gateshead, Durham; Stapleton, Radnorshire; city walls of Norwich; plentiful. Near Forfar and Kelly-Angus; Methven wood, Perthshire. Near Cork. 4. 7. — *Flowers* reddish-purple, large, handsome, mostly in the terminal axils.

(*Teucrium regium* Schreb., supposed by Mr. Benthani to be a var. of *T. flavum*, a plant peculiar to the region of the Mediterranean, is said to have been found on a declivity of the Bloreng near Abergavenny; but it cannot be indigenous.)

#### 7. A'JUGA Linn. Bugle.

*Cal.* ovate, nearly equal, 5 cleft. *Cor.* with the tube exserted: upper lip short, erect, entire or emarginate; lower one larger, patent, trifid. *Stam.* 4, ascending, protruded above the upper lip; cells of the anthers diverging or divaricate, at length confluent. — Name said by Pliny to be corrupted from *Abiga* (*abigo* partum, to prevent) of the Latins, a medicinal plant allied to this; but the Greek *αἴψυξ* (accus. *αἴψυγα*) implied the same property, and is the more obvious derivation.

1. *A. réptans* L. (*common B.*); glabrous or downy, stem solitary with creeping scions, leaves ovate or obovate sinuate or quite entire. *E. B.* t. 489.

Moist pastures and woods, abundant. 4. 5, 6. — *Leaves* broadly ovate, more or less crenate, lower ones and those on the runners tapering into a footstalk. *Flowering-stem* erect, with sessile leaves. *Flowers* blue (sometimes white or flesh-coloured), in whorls of 6—20 from the axils of the upper leaves or bracteas, which are often purplish.

2. *A. pyramidalis* L. (*pyramidal B.*); hairy or glabrous, upper or all the whorls spicate, scions none, radical leaves oblong-ovate large more or less crenate, floral leaves broadly ovate quite entire or obscurely sinuate longer than the flowers and crowded into a pyramidal and tetragonal form, upper ones usually coloured. *E. B.* t. 1270.

Highland pastures, rare. Ben Nevis; plentiful at the Burn of Kil-



ligower and on the Ord of Caithness; Tor Aichaltie, near Brahan Castle, Ross-shire; Appin; Strath Erric, Inverness-shire; Isle of Lewis. 4. 5, 6. — Stem 4—6 inches high. Leaves gradually becoming smaller from the base upwards.

3. *A. alpina* L. (*alpine B.*); stem erect hairy without scions, cauline leaves oblong elliptical or ovate narrowed at the base, lower ones rather longer stalked, floral leaves ovate or cuneate coarsely toothed membranaceous green on both sides thinly hairy, upper ones scarcely as long as the flowers, upper whorls of flowers spicate, lower ones distant. *E. B. t. 477.*

Mountains; rare. Wales. County of Durham (*Sm.*, denied by *Mr. Winch*); Castleton, Derbyshire. Cave-hill, Belfast. 4. 7. — We have seen no British specimens of this plant, and the Scotch ones, so called, have proved to be only *A. reptans*. The plant above described is the Swiss one (*A. Genevensis* L.): it is not improbable, as Fries says, that the true *A. alpina* L. has scions, although not preserved with the specimen, and if so it may be only an alpine form of *A. reptans*.

4. *A. Chamaepitys* Sm. (*Ground-Pine, or yellow B.*); hairy, stems much branched spreading, leaves tripartite their segments linear entire, floral leaves similar longer than the axillary solitary flowers. *E. B. t. 77. Teucrium L.*

Sandy or gravelly fields. Not unfrequent in Kent and Surrey; Triplow Heath, Cambridgeshire; Purfleet, Essex. ☉. 4—10. — Very different in habit from the preceding species. Flowers yellow, spotted with red, and nestled among the narrow segments of the leaves, of which the lowermost are much broader. Stem reddish-purple, glutinous.

Tribe IV. NEPETEÆ. Cor. 2-lipped. Stamens ascending or converging, shorter than the upper lip. (Gen. 8—21.)

\* *Cal. equal or oblique, 5—10-toothed, not 2-lipped.* (Gen. 8—16.)

† *Stamens ascending, longer than the tube of the corolla.* (Gen. 8—15.)

#### 8. *BALLŌTA* Linn. Horehound.

*Cal.* salver-shaped, equal, with 10 ribs and 5 broad mucronated teeth, naked within. *Cor.* with the tube included: upper lip erect, concave; lower one trifid, middle lobe the largest, emarginate. The two anterior stamens the longest. Cells of the anthers diverging, opening longitudinally. Achenes rounded at the end. — Named *βαλλωνη*, from *βαλλω*, to reject; on account of its disagreeable smell.

1. *B. nigra* L. (*black H.*); leaves ovate crenate-serrate, bracteas linear subulate, teeth of the calyx shortly acuminate patent longer than the tube of the corolla. — *a. cal.-tube* shorter

and stouter, the teeth broadly ovate short suddenly acuminate mucronate carinato-reflexed. *E. B. t. 46.* *B. fœtida Lam. B. borealis Schweigg.*—*β.* cal.-tube narrow and elongated gracefully dilated upwards, the teeth ovate gradually acuminate aristate erect-patent. *B. ruderalis Fries.*

Waste places near towns and villages, less frequent in the north. — *β.* Bomere, Shropshire. *γ.* 6—10. — *Stems* 2—3 ft. high. *Flowers* in whorls, purple, rarely white. Whole plant fetid. *Fries, Leighton,* and some others, pronounce the above varieties to be quite distinct species: *Mr. Bentham*, who has had more opportunities than any other of judging as to what ought to constitute a species in this order, does not consider them sufficiently marked to be noticed even as varieties.

### 9. LEONÚRUS Linn. Motherwort.

*Cal.* with 5 or 10 ribs, equal, with 5 subulate teeth, the throat naked. *Cor.* with the upper lip nearly flat, very hairy above, entire; lower one patent, trifid. The two anterior *stamens* the longest. *Anthers* sprinkled with shining dots; *cells* parallel, opening longitudinally. *Achenes* truncate.—Named from *λεων*, a lion, and *ουρα* a tail; from a fancied resemblance in the plant to a lion's tail.

1. *L. \*Cardiaca L. (M.)*; leaves petiolate, lower ones palmately 5-cleft incise-toothed, upper cuneate-lanceolate 3-lobed, uppermost entire, tube of the corolla with an oblique ring. *E. B. t. 286.*

Hedges and waste places, in several parts of England. About *Edinb.* South of Ireland. *γ.* 7—9. — *Stem* 3 ft. high, branched. *Flowers* in crowded whorls, white with a reddish tinge; upper lip of *cor.* shaggy. *Cal.* with pungent spreading teeth, the two lower rather the longest.

### 10. GALEÓPSIS Linn. Hemp-nettle.

*Cal.* campanulate, equal, 5-toothed, teeth mucronate. *Cor.* with the tube exerted, the throat inflated: upper lip arched; lower one with 3 unequal lobes, having two teeth on its upper side. The two anterior *stamens* the longest. *Anther-cells* opposite, bursting transversely, two-valved. *Achenes* rounded at the end. —Name: *γαλεη*, a weasel, and *οψis*, aspect or appearance; from a resemblance in the lips of the flower to the snout of that animal.

1. *G. Lódanum L. (red H.)*; stem softly pubescent with deflexed hairs or glabrous, not swollen below the joints, leaves lanceolate sub serrate downy on both sides, calyx having sometimes a few glands, upper lip of the corolla, slightly notched. *E. B. t. 884.*

Gravelly or chalky fields, or on limestone rubbish. Rare in Scotland;

near Dunfermline. ☉. 7—10. — *Stem* 10—12 inches high, with opposite branches. *Leaves* rather small, petiolate, hairy. *Flowers* purplish rose-coloured. Hairs on the calyx in the common form appressed, with a few glands: when the hairs are spreading without glands, the plant becomes the *G. canescens* Sch., which has been observed at Southampton.

2. *G. ochroleuca* Lam. (*downy H.*); stem softly pubescent with deflexed hairs not swollen below the joints, leaves ovate-lanceolate serrated soft and downy on both sides, calyx glandular hairy, upper lip of the corolla deeply notched. *G. villosa* Huds.: *E. B.* t. 2353.

Sandy corn-fields, rare. Yorkshire; Lancashire; Nottinghamshire; Berechurch, Essex. Bangor, Wales. ☉. 7, 8. — *Flowers* large, pale yellow. The name given by Lamarck has unquestionably the priority by twelve years of that by Hudson.

3. *G. Tetráhit* L. (*common H.*); stem hispid swollen below the joints, leaves oblong-ovate acuminate hispid serrated, calyx-teeth twice as long as the tube, corolla with the tube as long as the calyx, upper lip erect ovate. *E. B.* t. 207.

Corn-fields and cultivated grounds, frequent. ☉. 7—9. — *Stem* 1—2 ft. high. *Flowers* purplish, often white.

4. *G. versicolor* Curt. (*large-flowered H.*); stem hispid swollen below the joints, leaves oblong-ovate acuminate hispid serrated, calyx-teeth shorter than the tube, corolla with the tube much longer than the calyx, upper lip horizontal inflated. *E. B.* t. 667.

Corn-fields, Norfolk; common about Warrington. Near Llanrwst, N. Wales. Abundant in Scotland, especially in the Highlands. Ireland. ☉. 7, 8. — Often 2—3 feet high, with large rank foliage. *Flowers* showy, yellow, with a broad purple spot on the lower lip. Mr. Bentham unites it to the last; although often undistinguishable in the herbarium, it really appears quite different when growing.

## 11. GALEÓBDOLON Huds. Weasel-snout.

*Cal.* campanulate, 5-ribbed, nearly equal, 5-toothed. Upper lip of the cor. incurved, arched, entire; lower one smaller, in 3 nearly equal lobes. The two anterior *stamens* the longest: *anther*-cells diverging, opening longitudinally. *Achenes* acutely triquetrous, flatly truncated at the end. — Named from γαλεν, a weasel, and βδολος, a fetid scent, — formerly considered synonymous with *Galeopsis*, from which genus it is now removed. (Mr. Bentham unites it to *Lamium*.)

1. *G. luteum* Huds. (*yellow W.*, or *Archangel*); lateral lobes of the lower lip of the corolla oblong acute. *E. B.* t. 787.

Woods and shady places, in England, the south of Scotland, and Ireland. 4. 4—6. — One foot or more high. *Leaves* ovate-acumi-

nate, petiolate, deeply serrated. *Flowers* whorled, yellow; lower lip orange and spotted.

12. *LÁMIUM* Linn. Dead-nettle.

*Cal.* campanulate, 10-ribbed, 5-toothed, nearly equal. *Cor.* with the throat inflated: upper lip entire, arched; lower one patent, 2-lobed, with one or two teeth on each side at the base. The two anterior *stamens* the longest. *Anther*-cells diverging, opening longitudinally. *Achenes* acutely triquetrous, flatly truncated at the end. — Named from *λαμος*, the *throat*; on account of the shape of the flower.

1. *L. álbum* L. (*white D.*); leaves cordate-acuminate deeply serrated stalked, calycine teeth long subulate always spreading, tube of the corolla curved upwards within having a hairy ring, the throat dilated, upper lip oblong, lateral lobes of the lower one with 1—3 long subulate teeth. *L. vulgatum* Benth. —  $\alpha$ . flowers white, leaves spotless. *L. álbum* E. B. t. 768. —  $\beta$ . flowers white, leaves with white blotches. —  $\gamma$ . flowers purple, leaves spotless. *L. lævigatum* L. *L. rugosum* Ait. *L. maculatum* Sm.: E. B. t. 2550. —  $\delta$ . flowers purple, leaves smaller with white blotches. *L. maculatum* L.

Borders of fields and waste places, abundant. —  $\beta$ . Below Partick near Glasgow. —  $\gamma$ . Naturalized near Bristol, London, and in Fifeshire. —  $\delta$ . Fifeshire; Musselburgh; Hamilton. 4. 5—9. — We have followed Mr. Benthams in uniting *L. lævigatum* and *maculatum* of Linn., and *L. rugosum* of Aiton, with *L. álbum*:—and indeed, in Fifeshire and elsewhere, the white flowers of the latter are often tinged with red or purple, and the plant seems to pass gradually into *L. lævigatum*: we do not find the characters taken from the calyx, and ring of hairs within the corolla pointed out by some, to be constant.

2. *L. purpúreum* L. (*red D.*); leaves cordate crenate all stalked, upper ones crowded, teeth of the calyx as long as the tube always spreading, tube of the corolla straight within having a hairy ring, the throat much dilated, lateral lobes of the lower lip with two short teeth. E. B. t. 769.

Borders of fields and in hedges, plentiful. ☉. 4—10. — *Leaves*, especially the upper ones, with a silky hairiness, and a purplish tinge on the floral ones.

3. *L. incisum* Willd. (*cut-leaved D.*); leaves broadly cordate or deltoid-cuncate deeply incise-crenate all stalked, the uppermost crowded, teeth of the calyx subulate about as long as the tube always spreading, tube of the corolla straight naked within, lateral lobes of the lower lip with a short tooth. E. B. t. 1933.

Cultivated and waste ground, growing very large in the Hebrides. ☉. 4—6. — Very difficult to be distinguished by characters either

from the last or the next species, and perhaps the three might be judiciously combined.

4. *L. intermedium* Fries (*intermediate D.*); leaves obtuse incise-crenate, lower ones stalked reniform cordate, floral ones sessile rather crowded, teeth of the calyx subulate longer than the tube always spreading, tube of the corolla straight naked within, lateral lobes of the lower lip with a short tooth. *E. B. S. t.* 2941.

Newport, Isle of Wight; Shropshire. Not uncommon in Scotland. Sligo, Ireland. ☉. 6—9.—Calyx spreading, as in the two last, different, even in the herbarium, from that of the next species. Perhaps it is a mere variety of *L. incisum*.

5. *L. amplexicaule* L. (*Henbit N.*); leaves orbicular wrinkled incise-crenate the floral ones sessile, becoming distant by the lengthening of the stem, teeth of the calyx lanceolate-subulate about as long as the tube, erect after flowering, tube of the corolla straight naked within, tooth of the lateral lobes of the lower lip obsolete. *E. B. t.* 770.

Waste places, sandy fields and gardens. ☉. 4—8.—Corolla of a fine deep rose-colour, with a very slender tube, often small and abortive although the *achenes* ripen.

### 13. BETÓNICA Linn. Betony.

*Cal.* ovate, 10-ribbed; teeth 5, equal, awned. *Cor.* with the tube exserted, cylindrical: upper lip ascending; lower one patent trifid, its middle lobe entire, or nearly so. The two anterior *stamens* the longest. *Anther*-cells somewhat parallel, opening longitudinally. *Achenes* rounded at the end.—Name: altered from *Bentonic*, in Celtic; *ben*, meaning head, and *ton*, good, or tonic. Its properties are cephalic.

1. *B. officinalis* L. (*Wood B.*); hairy, spike interrupted short, leaves cordate-oblong crenate, corolla twice as long as the calyx, stem naked, middle lobe of the lower lip somewhat notched. *E. B. t.* 1142.

Woods and thickets; frequent in England, not common in Scotland. 4. 6—8. Stem 1—2 feet high, hairy, with few leaves, the lowermost on long footstalks, upper and floral ones sessile, uppermost linear quite entire and as long as the calyx. Spikes oblong-ovate. Calyx nearly glabrous. Bractees ovate, mucronate.

### 14. STÁCHYS Linn. Woundwort.

*Cal.* subcampanulate, 10-ribbed; teeth 5, nearly equal, acuminate. *Cor.* with the tube as long as the calyx: upper lip mostly arched, entire; lower one 3-lobed, with the two lateral lobes reflexed. The two anterior *stamens* the longest. *Anther*-cells diverging, opening longitudinally. *Achenes* rounded at

the end.—This genus scarcely differs from *Betonica* but in the shorter tube of its corolla.—Name : *σταχυς*, a *spike*; from the nature of the inflorescence.

1. *S. sylvatica* L. (*Hedge W.*); whorls of 6—8 flowers distant, bracteas minute, cal.-teeth very acute, leaves cordate-ovate acute serrate long-stalked, upper floral ones linear entire. *E. B. t.* 416.

Woods and shady places.  $\gamma$ . 7, 8. — *Stem* 2—3 feet high, hairy, filled with pith. *Leaves* truly cordate and tapering from below the middle to a point, in which respect it differs from the following. *Petioles* as long as the leaves themselves. *Flowers* purple.

2. *S. palustris* L. (*Marsh W.*); whorls of 6—10 flowers, bracteas minute, cal.-teeth very acute, leaves linear-lanceolate or ovate-lanceolate rounded or cordate at the base sessile or stalked.— $\alpha$ . lower leaves shortly stalked, upper sessile and semi-amplexicaul. *E. B. t.* 1675. —  $\beta$ . *ambigua*, leaves distinctly stalked, stalks not above half the length of the leaf. *S. ambigua Sm. : E. B. t.* 2089.

River-banks and watery or moist places, frequent.— $\beta$ . not uncommon in Scotland, especially in the West Highlands; also in various places in England and Ireland.  $\gamma$ . 7, 8. — *Plant* extensively creeping. *Stem* hollow. Perhaps there are two plants known under the name of *S. ambigua*: the one with narrow leaves, on stalks not a fourth of their length, is certainly a mere variety of *S. palustris*; the other, having broader leaves, and longer stalks, may be a hybrid between it and *S. sylvatica*.

3. *S. Germánica* L. (*downy W.*); whorls many-flowered, leaves oblong-ovate or ovate-lanceolate with a cordate base crenate or serrate densely silky stalked, upper ones lanceolate acute sessile, calyx silky, teeth acute subspinose, corolla externally woolly, bracteas as long as the calyx, stem erect woolly. *E. B. t.* 829.

Fields and hedges in England, on a limestone soil, and chiefly in Oxfordshire and Bedfordshire. Ducklington, Berks.  $\gamma$ , or  $\delta$  (*Bentham*). 7. — Remarkable for its dense covering of silky hairs or wool. Mr. Bentham remarks that he cannot satisfactorily distinguish this from the garden *S. lanata* on the one hand, nor from *S. alpina* on the other.

4. *S. arvensis* L. (*Corn W.*); annual, whorls of 4—6 flowers, stem decumbent or ascending, leaves cordate-ovate obtuse crenate slightly hairy stalked, floral ones ovate-oblong sessile acute, teeth of the calyx lanceolate aristate, corolla scarcely longer than the calyx. *E. B. t.* 1154.

Dry corn-fields, frequent. ☉. 4—11. — Distinguished by its diminutive size, weak *stems*, small and obtuse generally stalked *leaves*, and its pale purplish *corollas*, which scarcely exceed the calyx in length.

5. *S. \*ánnua* L. (*pale annual W.*); annual erect downy, whorls of 4—6 flowers spicate, leaves oblong-lanceolate rather acute crenate-serrate 3-nerved the lower ones stalked, floral ones lanceolate acute, cal. hairy its teeth lanceolate subulate, tube of the corolla longer than the calyx. *E. B. S. t.* 2669.

Fields between Gadshill and Rochester. ☉. 8, 9. — *Achenes* roundish, glossy, minutely rough.

### 15. *NÉPETA* Linn. Cat-mint. Ground-Ivy.

*Cal.* tubular, many-(15-)ribbed, its mouth usually a little oblique, 5-toothed. *Cor.* with the *tube* exserted: upper *lip* straight, emarginate or bifid; lower 3-fid. The two anterior stamens the shortest. *Anthers* before bursting approaching in pairs; cells diverging.—Named, some say, from *Nepi* a town in *Italy*; others from *Nepa*, a *scorpion*, for whose bite this plant was considered a cure.

1. *N. Catária* L. (*Cat-mint*); stems erect, flowers in spiked subpeduncled dense many-flowered whorls, leaves stalked cordate incise-serrate whitish pubescent beneath. *E. B. t.* 137.

Hedges and waste places, especially in a chalky or gravelly soil in England: rare in Scotland; hedges near Craig-Nethan Castle, Glasgow, and between Culross and Kincardine. At Rathfarnham; and by the Shannon, opposite Limerick; Ireland. 4. 7—9. — *Stems* 2—3 feet high, downy, as well as the *leaves*, and whitish. *Floral leaves* bract-like. *Flowers* white, tinged and spotted with rose colour. Upper lip of the *corolla* emarginate, lower with the lateral lobes reflexed, the middle lobes broad, concave, crenated. *Anthers* reddish. *Achenes* smooth and glabrous.

2. *N. Glechóma* Benth. (*Ground-Ivy*); procumbent, leaves reniform crenate, whorls axillary stalked unilateral 3—4-flowered, teeth of the calyx ovate mucronate. *Glechoma hederacea* L.: *E. B. t.* 853.

Hedges and waste places, frequent. 4. 3—5. — Extensively creeping. *Leaves* stalked, downy; floral ones similar to the others. *Flowers* large, blue; they were found pure white near Derby, by the late Mrs. Hardcastle. Upper lip of the *cor.* bifid; middle lobe of the lower one emarginate, plane, lateral lobes spreading.

†† *Stamens* ascending, included within the tube of the corolla.  
(Gen. 16.)

### 16. *MARRÚBIUM* Linn. White Horehound.

*Cal.* with 10 ribs and 5 or 10 spreading teeth, the throat hairy. *Cor.* with the *tube* exserted; upper *lip* erect; lower one 3-lobed, middle lobe the largest, emarginate. The two anterior *stamens* the longest. *Achenes* flatly truncated at the

end.—Name of doubtful origin; some say from a town so called in Italy.

1. *M. vulgäre* L. (*common white H.*); everywhere hoary with a white thick pubescence or woolliness, stem erect, leaves roundish-ovate toothed or crenate wrinkled, calyx with 10 setaceous hooked teeth, upper lip of the corolla oblong bifid. *E. B.* t. 410.

Waste places and way-sides. Frequent in England, less common in Scotland, where it is found near Edinburgh; also in Ireland. 4. 8, 9. — *Stem* 1—1½ ft. high, bushy. *Flowers* small, almost white, in crowded whorls. *Smell* aromatic; *flavour* bitter. This plant has been much in use for coughs and asthmas.

\*\* *Calyx* 2-lipped. *The two anterior stamens the longest.* ●  
(*Gen.* 17—20.)

† *Stamens* distant, but converging under the upper lip of the corolla. (*Gen.* 17.)

17. CALAMINTHA *Mænoch.* Calaminth. Basil-Thyme. Wild-Basil.

*Cal.* 13-nerved, tubular: upper lip 3-, lower 2-fid, throat mostly hairy. *Tube* of the cor. straight: upper lip straight nearly plane; lower one spreading trifid. *Anther-cells* at length diverging. *Connectivum* subtriangular.—Name: *καλος*, good, and *μυθα*, mint; a plant whose scent drove away serpents.

\* *Cal.* gibbous at the base below. *Middle lobe of the lower lip of cor.* nearly entire. *Whorls* of about 6 simple 1-flowered pedicels, with almost no bracteas. *Acinos.*

1. *C. A'cinos* Clairv. (*common B.*); stem ascending branched, leaves oblong on short stalks acute serrated more or less ciliated at the base. *Thymus* L.: *E. B.* t. 411. *Acinos vulgaris* Pers.

Cultivated fields, especially in a gravelly, sandy, chalky soil. Rare in Scotland; North Queensferry, &c. ☉. 7. — *Stem* 6—8 inches long. *Leaves* sometimes almost entire. *Flowers* bluish-purple. Lower lip of the corolla with the middle segment emarginate. *Smell* fragrant, aromatic.

\*\* *Cal.* nearly equal at the base. *Middle lobe of the lower lip of cor.* emarginate. *Whorls* of two lax peduncled cymes. *Bracteas* minute. *Calamintha.*

2. *C. Népetu* Link and Hoffm. (*lesser C.*); stem herbaceous with procumbent ascending or erect branches, leaves shortly stalked ovate serrate pale beneath, cymes stalked dichotomous many-flowered, calyx subcampanulate obscurely 2-lipped, teeth shortly ciliated all nearly of the same shape, the upper ones



slightly shorter, hairs in the mouth prominent. *Melissa L. Thymus Sm.*: *E. B. t.* 1414.

Dry banks and way-sides, on a chalky soil, in England, not common. 4. 7, 8. — “Rather smaller in all its parts than the next, especially the leaves, which are strongly serrated. Odour strong, resembling *Mentha Pulegium*. The prominent white hairs on the mouth of the cal. distinguish this species from the next.” *Sm.*

3. *C. officinális* Mœench (*common C.*); stem herbaceous with loose ascending branches, leaves stalked broadly ovate obtuse crenate-serrate green on both sides, cymes stalked few-flowered shortly dichotomous or umbellate, calyx distinctly 2-lipped, teeth with long ciliæ, those of the upper lip triangular straight or ascending, of the lower subulate and longer, hairs in the mouth not prominent, lobes of the lower lip of the corolla distant, middle one the longest. *Thymus Calamintha Scop.*: *E. B. t.* 1676. *Melissa Cal. L.*

Way sides and borders of fields, chiefly in gravelly soils in England, not very common. South of Ireland. 4. 7—9. — *Root* sometimes throwing out scions above-ground, and not creeping below. Plant aromatic and employed to make herb-tea. Mr. Bentham remarks that neither by habit nor characters can this be at all times distinguished from *C. Népetæ* or *sylvatica*; and Mr. H. Watson is equally at a loss: we experience the same difficulty.

4. *C. sylvatica* Bromf. (*Wood C.*); stem herbaceous with ascending branches, leaves stalked broadly ovate sharply serrated green on both sides, cymes stalked many-flowered dichotomous, calyx distinctly 2-lipped, teeth with long cilia, those of the upper lip spreading or recurved, of the lower subulate and longer, hairs in the mouth not prominent, lobes of the lower lip of the corolla contiguous, all nearly equally long. *E. B. S. t.* 2897.

Among copse-wood in the Isle of Wight. Kent. 4. 8—10. — *Root* slightly creeping below ground. *Leaves* large. *Cymes* on longer stalks than in the last species. It must be confessed that the principal distinction between this and the last lies in the upper lip of the calyx and corolla, and that it is almost impossible to detect these characters in dried specimens.

\*\*\* *Cal. nearly equal at the base. Middle lobe of lower lip of cor. notched. Whorls sessile, dense, many-flowered, with numerous linear bractæas, forming a sort of involucre. Clinopodium.*

5. *C. Clinopodium* Benth. (*common W.*); leaves ovate obscurely serrated, whorls hairy, bractæas setaceous, pedicels branched. *Clinopodium vulgare L.*: *E. B. t.* 1401.

Hills and dry bushy places, not uncommon. 4. 7—9. — *Stem* 1—1½ feet high, with soft hairs. *Flowers* in crowded whorls, large, purple. Smell aromatic.

(*Melissa officinalis L.*, or Balm, has been found naturalized about

Bridgewater, also in North Devon, and some other places in the south of England and Ireland.)

†† *Stamens ascending, parallel.* (Gen. 18—20.)

18. *MELITTIS* Linn. Bastard-Balm.

*Cal.* with branching veins, campanulate, ample: upper lip 2—3-toothed; lower 2-lobed, lobes broadly ovate. *Cor.* with the tube much exerted: upper lip nearly flat (or slightly concave), entire; lower one 3-lobed, spreading, lobes rounded, nearly equal. *Authers* approaching in pairs and forming a cross: *cells* distinct, diverging, opening longitudinally.—Name: the same as *μελισσα*, a bee; from *μελι*, honey; because yielding honey to bees.

1. *M. Melissophyllum* L. (*Bastard-Balm*). *E. B.* t. 577. *M. grandiflora* Sm.: *E. B.* t. 636 (*excl. syn. of Curtis*).

Woods, coppices, and hedges in the south (Hampshire), and particularly the south-west, of England. 4. 5, 6. — A most beautiful plant, a foot to a foot and a half high, with ample oblong-ovate or somewhat cordate serrated leaves, and large conspicuous often highly coloured flowers: the lower lip of the corolla is sometimes purple with a white margin, sometimes spotted with purple, but it varies considerably. The plant, when growing, is said to have a disagreeable smell, but when dried it is fragrant, like the *Anthoxanthum odoratum*, and the scent is retained for many years in the herbarium. *M. grandiflora* Sm. (the true *M. Melissophyllum* L.) is neither sufficiently marked nor permanent to constitute a distinct variety.

19. *PRUNELLA* Linn. Self-heal.

*Cal.* ovate: upper lip plane, more or less distinctly 3-toothed; lower one bifid. *Cor.* with the upper lip nearly entire, arched; lower one 3-lobed. *Filaments* with two teeth at the extremity, one bearing the 2-celled anther. *Style* bifid.—Named from the German, *braüne*, the quinsy, whence comes *Brunella* of Ray, softened into *Prunella*.

1. *P. vulgaris* L. (*common S.*); leaves stalked oblong-ovate, upper lip of the calyx truncated, its teeth usually obsolete, the teeth of the lower lip ovate-lanceolate mucronate, corolla scarcely twice the length of the calyx. *E. B.* t. 961.

Moist and barren pastures, frequent. 4. 7, 8. — Leaves in British specimens entire or toothed, in foreign ones sometimes incise or pinnatifid. Flowers very densely whorled, so as to form an imbricated oblong spike, with a pair of leaves at its base, and a pair of broad bractes beneath each whorl. *Cor.* violet-blue, its lower lip finely toothed at the margin.

## 20. SCUTELLÁRIA Linn. Skull-cap.

*Cal.* broadly ovate, having a conspicuous concave tooth or scale on the upper side; its 2 nearly equal entire *lips* closed after flowering. *Cor.* with the *tube* much exserted: upper *lip* straight, arched; lower one trifid. *Filaments* simple: *anthers* of the two lower stamens 1-celled, of the two upper 2-celled. *Style* bifid, upper lobe very short.—Named from *scutella*, a little dish or cup, which the calyx with its appendage or ear somewhat resembles.

1. *S. galericulata* L. (*common S.*); stem branched divaricated, leaves crenate oblong or ovate-lanceolate rounded or cordate at the base, flowers axillary solitary opposite secund, calyx downy without glands. *E. B.* t. 523.

Banks of rivers and lakes, especially in stony places. *℥.* 7, 8. — *Stem* 8 or 10 inches to 1 foot high. *Flowers* rather large, blue, usually downy.

2. *S. minor* L. (*lesser S.*); glabrous, leaves shortly stalked obtuse mostly quite entire, lowest ones broadly ovate, intermediate ones ovate lanceolate cordate and somewhat hastate at the base, upper and floral ones lanceolate rounded at the base, flowers (small) solitary axillary opposite unilateral, corolla nearly glabrous with the throat dilated, calyx downy without glands. *E. B.* t. 524.

Moist heathy places and by the sides of lakes, chiefly in the western and middle counties of England, very rare on the east coast. Wales. West coast of Scotland, rare; bog between Luss and Helensburgh, Dunbartonshire. *℥.* 7—10. — *Stem* 4—6 inches high. Lower leaves sometimes with one or two teeth at the base, and hence subhastate; upper ones much narrower and quite entire. *Flowers* pale-reddish, almost white. Lower *lip* spotted.

## ORD. LXIV. VERBENACEÆ Juss.

*Calyx* tubular or campanulate, persistent. *Corolla* mono-petalous; *tube* elongated; *limb* irregular 4—5-lobed. *Stamens* 4 didynamous, or 2; *anthers* 2-celled. *Ovary* 2—4-celled, 2—4-seeded. *Style* 1, terminal. *Stigma* bifid or entire. *Capsule* separating at length into 2—4 *achenes*, or indehiscent, or a *berry* with 1—4 *nucules*. *Albumen* 0. *Radicle* inferior.—Trees or shrubs or herbaceous plants. Leaves generally opposite.—The *Teak* of the East Indies, of which the timber is extensively employed for ship-building, belongs to this Natural Family.

## 1. VERBENA Linn. Vervain.

*Cal.* tubular, with 5 teeth, one of them generally shorter than the rest. *Cor.* tubular, with the limb rather unequal, 5-cleft. *Stamens* included (very rarely only 2). *Ovary* 4-celled; cells 1-seeded. *Capsule* dividing into 4, 1-seeded achenes. — Name: *ferfaen* in Celtic; derived from *fer*, to drive away, and *faen*, a stone, from having been supposed to cure the complaint so called. *Théis.*

1. *V. officinális* L. (common *V.*); stamens 4, stem 4-angled erect somewhat hispid, leaves rough especially beneath shining above lanceolate incise-serrate or trifid with the segments cut, spikes filiform somewhat paniced, flowers rather remote, bractæas ovate acuminate about half the length of the calyx. *E. B.* t. 767.

Road-sides and waste ground, frequent in England. Rare in Ireland. Inverkeithing, Scotland. 4. 7—9.

## ORD. LXV. LENTIBULARIACEÆ Rich.

*Calyx* divided. *Corolla* irregular, 2-lipped, with a spur. *Stamens* 2, from the base of the corolla. *Anthems* 1-celled. *Ovary* 1-celled. *Style* usually wanting or very short (rarely filiform). *Stigma* of 2 plates, upper one smaller, sometimes obsolete. *Capsule* with a large central placenta, bearing many seeds, which are very minute, without albumen. — *Small*, herbaceous, marsh plants with leaves all radical and undivided; or aquatic plants with compound root-like leaves bearing bladders.

1. PINGUICULA. *Cal.* 2-lipped, upper lip 3-lobed.

2. UTRICULARIA. *Calyx* bipartite, upper segment entire.

## 1. PINGUICULA Linn. Butterwort.

*Cal.* 2-lipped, upper lip of 3, lower of 1, bifid segment. *Cor.* ringent. *Stigma* sessile. *Capsule* with 2 lateral valves. — Named from *pinguis*, fat; the leaves being thick and greasy to the touch.

1. *P. vulgaris* L. (common *B.*); spur subulate-cylindrical nearly straight shorter than the veinless limb of the corolla whose segments are very unequal oblong-obovate rounded even diverging from each other and all entire, capsule ovate acute. *E. B.* t. 70.

Bogs, moist banks and heaths, most abundant in the North. 4. 5—7. — *Foliage* radical, covered with minute raised crystalline points, fleshy, the margins involute. *Scapes* single-flowered, and the *calyx*

somewhat downy. *Flowers* purple, very handsome, drooping; palate covered with white compactly jointed hairs. *Anthers* vertical, placed just beneath the large horizontal plate or lobe of the *stigma*. *Caps.* ovate, 1-celled, bursting half-way into 2 valves. — The leaves are said to coagulate milk, whence the English name.

2. *P. grandiflora* Willd. (*large-flowered B.*); spur subulate-cylindrical often notched about as long as the veined limb of the corolla whose segments are very unequal broadly obovate wavy contiguous or overlapping at the edges, the middle one of the lower lip notched, capsule ovate obtuse. *E. B. t.* 2184.

Western part of the county of Cork, in marshy ground; and at Kenmare. 4. 5, 6. — This beautiful plant, apparently as rare upon the Continent as in Britain, may be easily cultivated for a succession of years; like *P. vulgaris*, its old leaves die away in winter, and buds or hybernacula are formed, which expand into perfect individuals in the spring. It must be confessed, indeed, that the above characters are obtained solely from cultivated specimens, and that we have seen dried wild ones which we were uncertain whether to refer here or to the preceding species.

3. *P. alpina* L. (*alpine B.*); spur conical shorter than the unequal limb of the corolla and curved towards the lower retuse lip, scape glabrous, capsule acute. *E. B. S. t.* 2747.

Bogs in Scotland, very rare. Isle of Skye.<sup>1</sup> Bogs of Aughterflow and Shannon, on the Rose Haugh property, Ross-shire. 4. 6. — *Leaves* and *flowers* about the size of *P. Lusitanica*; but the texture of the foliage most resembles that of *P. vulgaris*. *Corolla* yellowish; within on the under-side is a tuft of deep-yellow crystalline hairs. *Spur* remarkably short and conical, curved upwards.

4. *P. Lusitanica* L. (*pale B.*); spur cylindrical obtuse de-curved shorter than the almost equal limb of the corolla, leaves veiny and as well as the scape hairy, capsule globose. *E. B. t.* 145.

Marshy places and wet moors, chiefly confined to the west side of the kingdom: never, we believe, found on the east side, and rarely in the interior. Plentiful in the Hebrides and Ireland, but most abundant in the extreme north of Scotland, near Cape Wrath, growing among *Jungermannia cochleariformis* and *Arbutus alpina*. 4. 6—10.

## 2. UTRICULÁRIA Linn. Bladderwort.<sup>2</sup>

*Cal.* bipartite, upper lobe entire, lower often notched or 2-

<sup>1</sup> Dr. Graham says, *l.c.*, "I understand there are two specimens in the Herbarium of Sir J. E. Smith, upon the same paper with *P. Lusitanica*, marked as sent to him by Mr. James Mackay, in September, 1794, from the Isle of Skye."

<sup>2</sup> The British species of this genus are all aquatics: and their roots, stems, and even leaves, are furnished with numerous, membranaceous reticulated *vesicles*, which, according to Hayne, are filled with water, till it is necessary the plant should rise to the surface and expand its blossoms above that fluid. The vesicles are then found to contain only air, by aid of which the plant floats: this air again in autumn gives place to water, and the plant descends to ripen its seeds at the

toothed. *Cor.* personate. *Style* 0 (or filiform and persistent). *Stigma* 2-lipped.—Named from *utriculus*, a little bladder.

1. *U. vulgaris* L. (*greater B.*); spur conical straight obtuse about half the length of the corolla, the upper lip of which is as long as the projecting palate, sides of the lower lip recurved, leaves pinnate-multifid remotely spinulose, vesicles attached to the leaves. *E. B.* t. 253.

Ditches and deep pools, not unfrequent. 4. 6, 7.—*Roots* much branched. *Shoots* or *runners* floating horizontally in the water, clothed with capillary multifid leaves, bristly at the margin and bearing little crested bladders. *Scape* erect, 4—6 inches high, with 6—8 bright yellow flowers in a raceme. Lower lip convex, much larger and broader than the upper one, and having a projecting palate closing the mouth. *Spur* short, deflexed. *Filaments* curved, thick, resembling those of *Pinguicula*. *Anthers* slightly cohering. *Stigma* large, ciliated.

2. *U. intermedia* Hayne (*intermediate B.*); spur conical acute pressed against the lower lip somewhat shorter than the corolla, the upper lip of which is entire twice as long as the palate, lower entire nearly flat, leaves tripartite their segments linear dichotomous ciliated, vesicles on leafless branches. *E. B.* t. 2489.

Ditches and deep pools, much less frequent than the preceding. Scotland Heath, Corfe Castle, Dorset. In Rescobie Lake, Forfar; also near Elgin. About Dublin and Bantry in Ireland. 4. 6, 7.—This has probably been passed by as the *U. vulgaris*; but its flowers are fewer (only 2 or 3 on each scape), smaller, of a paler yellow, and have a longer upper lip. The stems are more leafy, and the bladders arise from branched stalks, not from the leaves. It propagates itself by buds or gemmæ which proceed from the ends of the shoots, and seldom flowers. At the season of flowering, however, Mr. Borrer finds the vesicles all immersed in the mud, and the leafy shoots floating under water.

3. *U. minor* L. (*lesser B.*); spur obtuse keeled deflexed much shorter than the corolla, the upper lip of which is notched and as long as the palate, lower lip obovate nearly flat, leaves subtripartite, the segments linear dichotomous glabrous, vesicles attached chiefly to the leaves. *E. B.* t. 254.

Ditches and pools, rare; not unfrequent in many parts of Scotland, extending its range even to Skye. 4. 6—9.—Smaller than the last. *Vesicles* mixed with the leaves, which latter are glabrous at the margin. *Flowers* very pale yellow, and small. *Spur* scarcely any. Lower lip almost plane; palate scarcely closing the mouth, not projecting beyond the lip. *Stigma* glabrous.

bottom. Mr. Wilson observes, with reference to the bladders of *U. vulgaris*, that "they have an orifice closed by an elastic valve, opening inwards; and of much thinner texture than the bladder, to which it is attached, where the crest is placed. Aquatic insects often enter these bladders, and are, of course, confined there."

## ORD. LXVI. PRIMULACEÆ Vent.

*Calyx* 4—7-cleft (half superior in *Samolus*). *Corolla* regular, 4—7-lobed, inferior (wanting in *Glaux*). *Stamens* as many as and alternate with the sepals, opposite to the lobes of the corolla. *Ovary* 1-celled, with the *ovules* upon a large free central *placenta*. *Style* 1. *Stigma* capitate. *Fruit* a *capsule*. *Seeds* usually peltate. *Embryo* usually transverse (parallel to the *hilum*); very rarely (in *Hottonia*) erect, with the *radicle* close to the *hilum*. *Albumen* fleshy.—Herbaceous plants, chiefly of the colder and temperate regions.

\* *Ovary superior*.

† *Calyx divided almost to the base*.

1. *HOTTONIA*. Cal. 5-partite. Cor. salver-shaped. Caps. with valves connected at the summit.

†† *Cal. tubular or campanulate*.

2. *PRIMULA*. Cal. tubular or campanulate, herbaceous. Cor. salver-shaped; limb spreading.
3. *CYCLAMEN*. Cal. campanulate, herbaceous. Limb of cor. closely reflexed.
4. *GLAUX*. Cal. campanulate, coloured. Cor. wanting.
5. *TRIENTALIS*. Cal. about 7-partite. Cor. rotate. Stam. glabrous. Caps. opening to the base with revolute fugacious valves.
6. *LYSIMACHIA*. Cal. 5-partite. Cor. rotate. Stam. glabrous or glandular. Caps. opening at the summit with 5—10 teeth or valves.
7. *ANAGALLIS*. Cal. 5-partite. Cor. rotate or widely funnel-shaped. Stamens hairy. Caps. opening transversely.
8. *CENTUNCULUS*. Cal. 4-partite. Cor. with a subglobose tube. Stam. glabrous. Caps. opening transversely.

\*\* *Ovary half-inferior*.

9. *SAMOLUS*. Cor. salver-shaped.

*A. Capsule superior, opening by valves which remain connected at the apex. Seeds with the hilum at the base, and an erect embryo. Hottoniæ. (Gen. 1.)*

1. *HOTTÓNIA* Linn. Water-Violet.

*Cal.* 5-partite. *Cor.* salver-shaped, with a short tube and flat limb. *Stamens* 5, glabrous, inserted into the tube, included. *Stigma* globose. *Caps.* globose, crowned with the persistent style, at length splitting at the sides with 5 valves which remain connected at the base and summit. *Seeds* very numerous.—Named after *Pierre Hotton*, a professor at Leyden during the latter half of the 17th century.

1. *H. palustris* L. (*common W. or Featherfoil*); flowers whorled on a long solitary cylindrical stalk, corolla longer than the calyx, leaves pectinated. *E. B.* t. 364.

Ditches and pools in England, but not found in Scotland. Downpatrick, Ireland.  $\mathcal{U}$ . 5, 6. — *Root* creeping. *Leaves* all submerged. *Flowers* large, handsome, pale purple, rising above the water.

*B. Capsule superior, opening at the apex by valves or teeth. Seeds peltate; embryo transverse. Primulææ. (Gen. 2—6.)*

2. PRIMULA Linn. Primrose. Oxlip. Cowslip.

*Cal.* tubular or campanulate, 5-toothed. *Cor.* salver-shaped, its tube cylindrical, its mouth open. *Caps.* opening with 10 teeth. — Named from *primus*, *first*, on account of the early appearance of the flowers in the most common species, — in France *Primevère*.

1. *P. vulgaris* Huds. (*common P.*); leaves oblong-ovate crenate-toothed wrinkled, scape umbellate usually sessile sometimes on a common stalk, flowers erect, calyx tubular somewhat inflated teeth linear-lanceolate attenuated very acute, limb of the corolla flat, tube with a circle of scale-like folds at the slightly contracted mouth. —  $\alpha$ . umbel sessile among the leaves. *E. B.* t. 4. *P. acaulis* All. *P. grandiflora* Lam. *P. veris*  $\gamma$ . *acaulis* L. —  $\beta$ . umbel stalked.

Woods, hedge-banks, and pastures, abundant.  $\mathcal{U}$ . 4, 5. — If the *flower-stalks* of the *var. a.* or common form, are traced to their very base, they will be found to spring from one common point, and to constitute a sessile *umbel*. The *var. b.* is the *Polyanthus* of our gardens, and often supposed to be *P. elatior*.

2. *P. elatior* Jacq. (*Jacquin's O.*); leaves ovate toothed wrinkled contracted below the middle, scape umbellate outer flowers drooping, calyx tubular usually close to the tube of the corolla, teeth lanceolate acute, limb of the corolla slightly concave, tube open at the mouth without scales or folds. *E. B.* t. 513. *P. veris*  $\beta$ . *elatior* L.

Woods and meadows in the eastern counties of England, particularly about Bardfield in Essex. Hitcham, Suffolk.  $\mathcal{U}$ . 4, 5. — We are not satisfied that this species is really distinct from the numerous hybrids between *P. vulgaris* and *P. veris*: the only characters which these two have in common and which therefore may be expected in all their hybrids, and which have not been noticed in the present species, are the slightly inflated calyx, slightly contracted mouth of the corolla, and folds or plait<sup>s</sup> in its throat; but the true *P. elatior* has the calyx sometimes slightly inflated, and the folds are sometimes quite obsolete in both *P. vulgaris* and *veris*; so that the open or slightly contracted mouth of the tube of the corolla is all that can be depended on to distinguish Jacquin's Oxlip from the com-



mon oxlip of England, which is now allowed to be a hybrid production. (See *Dr. Bromfield* in *Phyt.* iii. p. 695.)

3. *P. veris* L. (*common C. or Paigle*); leaves ovate crenate toothed wrinkled contracted below the middle, scape umbellate, flowers drooping, calyx tubular campanulate, teeth short ovate, limb of the corolla concave, tube with a circle of scale-like folds at the slightly contracted mouth. *E. B.* t. 5.

Meadows and pastures, frequent in a clayey soil in England. Rare in Scotland; near Edinburgh, and in Fifeshire. 4. 4, 5. — On the Continent the present species and *P. vulgaris* never grow intermingled, and constantly retain the characters assigned to them: in England, however, (and in Scotland wherever *P. veris* is found) they are found together, and a complete series of intermediate forms, constituting the common Oxlip, may be observed, which may either be accounted fertile hybrids (for we believe they are fertile), or as proofs of the two extremes being only different races of the same species. If this latter view be adopted, the *P. elatior* may rank as a third and connecting race. Speaking of the two extremes, Mr. H. C. Watson says, "the two may be pretty accurately distinguished, each having a variety '*elatior*.' Independently of other characters, all the *Cowslips* and *Cowslip-Oxlips* have the scape and calyx tomentose; whilst *Primroses* and *Primrose-Oxlips* have long soft hairs, and should be called villose or shaggy."

4. *P. farinosa* L. (*Bird's-eye P.*); leaves obovate-lanceolate mealy crenulate, calyx oblong-ovate, limb of the corolla plane its mouth obscurely glandular, the segments obcordate distant attenuated at the base nearly as long as the tube. *E. B.* t. 6.

Mountainous pastures in the north of England, especially Yorkshire, not unfrequent. Very rare in Scotland; south of West Linton, near Edinburgh. 4. 6, 7. — One of the most elegant of plants, scarcely yielding in beauty to the next species. The powdery substance on the leaves, scape, and calyx, has a musky smell. *Flowers* pale lilac-purple, with a yellow eye.

5. *P. Scôtica* Hook. (*Scottish P.*); leaves obovate-lanceolate mealy denticulate, calyx ventricose, limb of the corolla flat its mouth glandular, the segments broadly obcordate approximate half the length of the tube. *E. B. S.* t. 2608.

North coast of Caithness, discovered by Mr. W. Gibb of Inverness. Frequent also on the north coast of Sutherland, and in the Orkney Islands, growing upon the sandy shores. 4. 7. — To us this appears a distinct species, but M. Duby is of a contrary opinion, and our only doubts arise from the circumstance of its not having been observed in corresponding situations on the Continent, from whence all our plants in one form or other have migrated. It is not half the size of the preceding, but has a stouter habit. *Flowers* deep bluish-purple, with a yellow eye. In *P. farinosa*, the *germen* is broadly obovate and the *stigma* capitate: here the *germen* is globose, and the *stigma* has 5 points.

3. CÝCLAMEN Linn. Sow-bread,

*Cal.* campanulate, half 5-cleft. *Cor.* rotate; the mouth prominent, the segments reflexed. *Stamens* 5, included. *Caps.* globose, 1-celled, opening with 5 teeth.—Named from κυκλος, a circle, probably from the circles formed by the spiral peduncles; in French, *Pain de Pourceau*, and in English *Sow-bread*, because the large tuberous roots are eagerly sought by swine, notwithstanding their highly acrid nature.

1. *C. \*hederafólium* Willd. (*Sow-bread*); leaves heart-shaped angular finely toothed their ribs and footstalks roughish, tubes of the corolla globose, mouth 5-angled "with lunulate 10-toothed sides." *C. Europæum* *E. B.* t. 548.

On a bank at Bramfield, Suffolk; near Sandhurst (in profusion), and Gouldhurst, Kent; Pembroke; Notts (plentiful). 4. 9.—*Leaves* springing from the top of the large tuberous root. *Cor.* white or flesh-coloured. *Scapes* spirally twisted after flowering, so as to bury the seed-vessels in the earth. Probably some of the above stations may belong to *C. Europæum*, as suggested by Mr. H. Watson; our own specimens indeed are too few and imperfect to permit us to ascertain correctly the species. But the whole genus is a Southern and Eastern one, not even occurring in the Flora of Paris; and none of the species can have any claims to be admitted as indigenous, if indeed any can properly be said to be naturalized in this country.

4. GLAÚX Linn. Sea-Milkwort.

*Cal.* campanulate, coloured, of 1 piece, 5-lobed. *Cor.* none. *Stam.* 5, glabrous. *Caps.* superior, globose, 5-valved, with about 5 seeds.—Name: γλαυξ, a plant so called from its colour, being γλαυκος, or sea-green.

1. *G. marítima* L. (*Sea M.* or *black Saltwort*). *E. B.* t. 13.

Sea-shore and muddy salt-marshes, abundant. 4. 6, 7.—*Stems* 2—4 or 5 inches long, stout, branched, often procumbent. *Leaves* opposite, ovate, glabrous, fleshy, entire, sessile, small. *Flowers* sessile, solitary, axillary, rose-coloured, with 5 obtuse, spreading lobes.

5. TRIENTALIS Rupp. Chickweed Winter-green.

*Cal.* about 7- (5—9-) partite. *Cor.* rotate: tube very short; limb of as many deep flat divisions as the calyx. *Stam.* as many as the sepals, beardless. *Caps.* opening to the base with 5—9 recurved fugacious valves. *Seeds* with a reticulated tunic.—Name supposed to be the same as *triēntalis*, the third part of a foot, or 4 inches, such being the usual height of the plant.

1. *T. Europæ'a* L. (*European Chickweed W.*); leaves oblong-obovate obtuse. *E. B.* t. 15.

Woods in the North of England, rare. Abundant in many parts of the Highlands of Scotland. [Not found in Ireland. 2. 6. — Root filiform, creeping. Stems 4—6 inches high, with 2 or 3 small distant leaves, and 4—7 terminal whorled larger ones, from the centre of which arise 1—4 slender single-flowered peduncles. Cal-leaflets almost subulate, varying in number from 6 to 9, as do all the other parts of the flower and the valves of the capsule. The beautiful covering, like the finest white lace, of its seeds, has been taken for a pericarp by botanists who had not seen the very fugacious horny valves of its capsule.

#### 6. *LYSIMACHIA* Linn. Loose-strife.

Cal. 5-partite. Cor. rotate. Stam. 5—6, not distinctly hairy, sometimes with alternating sterile filaments. Caps. 1-celled, 5—10-valved. — Named in honour of king *Lysimachus*, according to some; according to others, from *λυσις*, a dissolving, and *μαχη*, battle. The English name, it will be at once seen, has a similar meaning. Pliny says it tames restiff horses.

1. *L. vulgaris* L. (*great yellow L.*); stem erect, leaves ovate-lanceolate nearly sessile opposite or ter-quaternate, panicles compound terminal and axillary, lobes of the corolla ovate obtuse quite entire, stamens unequal combined for half their length into a glandular tube without sterile ones. *E. B. t.* 761.

Sides of rivers and wet shady places, less frequent in Scotland. 2. 7, 8. — Stem erect, 2—3 ft. high. Leaves nearly sessile, glabrous or downy beneath. Panicle leafy, usually much branched. Corollas large, yellow, handsome.

(*L. ciliata* L. *E. B. S. t.* 2922, has been found near Serbergham, Cumberland, by Mr. W. Backhouse; but, although now naturalized there and in several places on the continent of Europe, it is a truly N. American species: its stems are erect, peduncles axillary racemose, leaves ovate-lanceolate, subcordate with ciliated petioles, lobes of the corolla crenate, and there are 10 filaments, all distinct, of which 5 are sterile.)

2. *L. thyrsiflora* L. (*tufted L.*); erect simple, leaves opposite lanceolate sessile, racemes dense many-flowered stalked axillary, segments of the corolla linear-spathulate quite entire, sterile filaments none. *E. B. t.* 176. *Naumbergia Duby.*

Wet marshes and water-sides, very rare in England; Yorkshire, Hertfordshire, and Anglesea. More frequent in Scotland: near Forfar, and at Duddingston Loch, on the east coast; canal-side near Possil, and near Rosdhu, by Loch Lomond, in the former place most abundant, and growing in the water. 2. 7. — Stems 1—2 ft. high. Flowers numerous, small, collected into dense, axillary, peduncled racemes. Number of the parts of the flower very variable, oftener 6 than 5. Cor. deeply cut into very narrow segments, separated by a minute tooth, yellow, and as well as the cal. spotted with orange. Stamens slightly united at the very base: anthers cordate.

3. *L. nemorum* L. (*yellow Pimpernel* or *Wood L.*); leaves ovate acute opposite shortly stalked, stem prostrate, peduncles 1-flowered axillary solitary longer than the leaves, calycine segments linear-subulate, stamens smooth distinct. *E. B. t.* 527.

Woods and shady places, frequent. 4. 5—8.

4. *L. Nummularia* L. (*creeping L.*, *Money-Wort*, or *Herb-Twopence*); leaves opposite subcordate or ovate obtuse shortly stalked, stem prostrate creeping, peduncles 1-flowered axillary solitary shorter than the leaves, calycine segments ovate acute, filaments glandular connected at the base. *E. B. t.* 528.

Shady places and pastures. Commonly cultivated, but scarcely indigenous, in Scotland. 4. 6, 7.

*C. Capsule superior, opening transversely.* Anagallidæ.  
(Gen. 7, 8.)

#### 7. ANAGALLIS Linn. Pimpernel.

*Cal.* 5-partite. *Cor.* nearly rotate. *Stamens* 5, hairy. *Cap-sule* bursting all round transversely. — Named from *ανα*, again, and *αγαλλω*, to adorn, from these plants re-adorning, every spring, the fields and road-sides with their beautiful blossoms: for the same reason a *Hyacinth* was called *αγαλλis*.

1. *A. arvensis* L. (*scarlet P.* or *Poor Man's Weather-glass*); stems ascending or subprocumbent branched, leaves opposite or ternate ovate sessile dotted beneath, peduncles longer than the leaves, calyx nearly as long as the rotate corolla. — *α.* margin of the corolla crenate piloso-glandulose. *E. B. t.* 529. — *β. cærulea*; margins of the corolla toothed scarcely at all glandulose. *A. cærulea* Schreb.: *E. B. t.* 1823.

Corn-fields, frequent. — *β.* not rare in similar situations, principally in England. ☉. 5—11. — *Flowers* generally bright scarlet, sometimes blue, sometimes flesh-coloured, and Mr. Dillwyn Llewellyn has found, at Penllégare, S. Wales, specimens with the flowers pure white, and a small, well defined, bright purplish-pink eye in the centre of every corolla. The Rev. Professor Henslow has proved, by cultivation from seed, that *A. cærulea* and *A. arvensis* are varieties of the same species: on the other hand, Mr. Borrer is of opinion that our two varieties are distinct species, but that each varies with the same tints of colour.

2. *A. tenella* L. (*Bog P.*); stem creeping filiform, leaves opposite ovate or roundish stalked, peduncles longer than the leaves, calyx four times shorter than the broadly and widely funnel-shaped corolla. *E. B. t.* 530.

Wet mossy bogs, frequent in England, more rare in Scotland. 4. 7, 8. — A beautiful little plant, as are all of this genus, 2—4 inches long. *Leaves* small. *Flowers* large in proportion to the size

of the plant, on rather long footstalks. *Cor.* rose colour. *Filaments* slightly connected at the base.

### 8. *CENTUNCULUS* Linn. Chaffweed.

*Cal.* 4-partite. *Cor.* with a globose inflated tube; limb spreading, 4-partite. *Stam.* 4, short, beardless. *Caps.* bursting all round transversely. (*Leaves* alternate. *Flowers* sessile.)—Name, it appears, anciently given to the *Pimpernel*, a genus allied to this; and derived, according to Théis, from *cento*, a patchwork, from the way in which it covers the ground.

1. *C. minimus* L. (*small C.* or *Bastard Pimpernel*); leaves ovate mucronate sessile. *E. B.* t. 531.

Moist sandy or gravelly places about London, in Kent, Bedfordshire, Norfolk, Suffolk, Hampshire, the South of Ireland, and Lowlands of Scotland, not frequent,—probably, however, often overlooked on account of its small size. ☉. 6, 7. — Plant 1—2 inches high, more or less branched. *Leaves* alternate, ovate, glabrous. *Flowers* extremely minute, sessile, axillary, solitary. *Cor.* pale rose colour, withering. Perhaps the only species of the genus, *C. lanceolatus* of N. America being scarcely distinct. *C. tenellus* of Duby is identical with *Micropyxis pumila* of the same author.

*D. Capsule* half-superior, opening by valves. *Embryo* transverse. *Samolææ.* (Gen. 9.)

### 9. *SÁMOLUS* Linn. Brookweed.

*Cal.* 5-cleft. *Cor.* salver-shaped, its tube short, with 5 scales (imperfect *stamens*) at its mouth, alternating with the lobes. *Capsule* half-inferior, opening with 5 valves.—Name, according to Pliny, an ancient Druidical one for some now unknown marsh-plant, possessed of wonderful sanatory properties; probably the same as *slan-lus*, in Celtic, *the healing herb*, or *all-heal*, imitated in Latin by *Samolus*, as if derived from *sanus*, whole.

1. *S. Valerandi* L. (*Brookweed* or *Water Pimpernel*); leaves obtuse, racemes many-flowered, pedicels with a small bractea. *E. B.* t. 703.

Marshy and watery places, especially in a gravelly soil. In Scotland always near the sea and chiefly on the west coast. 4. 6—9. —A plant very generally dispersed throughout the world. *Stem* 8—10 inches high, rounded, glabrous, as are the ovate, subpetiolate, entire, fleshy leaves. *Flowers* small, white. *Cal.* small, 5-cleft, persistent; its segments crowning the rounded capsule.

## ORD. LXVII. PLUMBAGINACEÆ Juss.

*Calyx* tubular. *Corolla* regular, of 5 united or distinct petals.

*Stam.* hypogynous or inserted upon the corolla. *Ovary* single, 1-celled, with one *ovule* suspended from the apex of a stalk arising from the base of the cell. *Styles* 5, sometimes united to the middle or to the summit. *Stigmas* 5. *Capsule* indehiscent or opening irregularly, 1-seeded. *Embryo* straight in the axis of farinaceous *albumen*.—*Herbaceous* or somewhat *shrubby* plants. Flowers often *capitate* or *spiked*.

1. ARMERIA. Styles hairy. Scapes simple: flowers capitate.
2. STATICE. Styles glabrous. Scapes paniced.

### 1. ARMERIA Willd. Thrift. Sea-Pink.

*Cal.* funnel-shaped, plaited, dry and membranous. *Pet.* united at the base, bearing the stamens. *Styles* distinct, hairy: *stigmas* filiform, glandular. (*Flowers* collected into a bracteated rounded head with an inverted cylindrical sheath.)—Name: *Flos Armeria* was applied by the botanists of the middle ages to some of the Sweet-william Pinks, and is, according to Clusius, the French word *armoiries* latinized.

1. *A. maritima* Willd. (common *T.* or *S.*, or *Sea-Gillflower*); leaves linear 1-nerved, awns of the calyx short. *Statice Armeria L.*—*α.* leaves flattish above, calyx-tube uniformly hairy.—*β.* leaves flattish above, calyx-tube hairy on the ribs glabrous between them. *Statice Armeria Sm.: E. B. t. 226.*—*γ.* leaves grooved and dotted above, calyx-tube uniformly hairy. *A. pubigera β. Boiss.*<sup>1</sup>—*δ.* leaves grooved above, calyx-tube hairy on the ribs only. *A. duriuscula Bab.*

Muddy sea-shores, and among rocks by the sea-side, *α.* and *δ.* rare; *γ.* common; *β.* on the east coast of Scotland and upon the tops of our highest mountains. *γ.* 4—9. — *Leaves* all radical, numerous. *Heads of flowers* rose-coloured or white, intermixed with scales, and having, besides, a brown, membranous, 3-leaved *involucre*, terminating below in a sheathing jagged covering to the upper part of the scape, which is usually downy, but sometimes glabrous.

2. *A. plantaginea* Willd. (*Plantain-leaved T.*); leaves linear-lanceolate 3—5-nerved, awns of the calyx long. *E. B. S. t. 2928.* *Statice plantaginea All.*

Abundant in the sandy district of Quenvais, on the west side of the Island of Jersey. *γ.* 6, 7. — This is readily distinguished from the last by the broad leaves, and long setaceous teeth to the calyx. *Flowers* pale purple.

### 2. STATICE. Linn. Sea-Lavander.

*Cal.* funnel-shaped, plaited, dry and membranaceous. *Pet.*

<sup>1</sup> The var. *α.* of Boissier is some plant cultivated in the Paris *hothouses*, and ought to be very different: at the same time the proposed *characters* nearly agree, which shows of how little value they are.

united at the base, bearing the stamens. *Styles* distinct, glabrous: *stigmas* filiform, glandular. (*Flowers* in unilateral spikes on a paniced *scape*). — Named from *στανίζω*, to stop; having been employed, from its astringent qualities, to check dysentery.

1. *S. Limonium* L. (*spreading-spiked S.*); leaves elliptic-lanceolate stalked mucronate single-ribbed, scape with a much-branched spreading corymb at the top, branches curved outwards, spikes short densely flowered, calyx-segments acute with intermediate teeth. *E. B.* t. 102.

Frequent on the muddy shores and salt-marshes of England. Rare in Scotland and perhaps found only about Berwick upon Tweed. *℥.* 7—9. — *Leaves* 4 inches to a span high,  $\frac{1}{2}$  or  $\frac{3}{4}$  as tall as the scape, single-ribbed with lateral oblique veins, mucronate: the mucro is recurved, being “a continuation of the margin of the leaf, and is channelled. *Scape* angular, often furrowed above, with a coarse uneven surface.” *Panicle* truly corymbose and level-topped, with spreading or sometimes recurved densely flowered branches, in which respect this species appears to differ from the following.

2. *S. Bahusiensis* Fries (*remote-flowered S.*); leaves oblong-lanceolate stalked mucronate single-ribbed faintly nerved, scape much branched from near the base paniced, branches ascending or incurved, spikes elongated with rather distant flowers, calyx-segments acute with intermediate teeth. *S. rariflora* *Drej.*: *E. B. S.* t. 2917.

Muddy shores, more widely distributed than the last. Chichester Creek, Sussex; Fareham Creek, &c. near Portsmouth; Devonshire; Kent; Suffolk. Wigton and Kirkcudbrightshire, Scotland. Galloway, Ireland. *℥.* 7, 8. — Perhaps too nearly allied to *S. Limonium*.

3. *S. binervosa* G. E. Sm. (*upright-spiked S.*); leaves spatulate narrowed into a winged stalk more or less mucronate somewhat 3-nerved at the base, scape branched from below the middle, panicle elongated, branches distichous, spikes erect, calyx with plane blunt segments without intermediate teeth. *E. B. S.* t. 2663. *S. cordata* G. E. Smith, in *Cat. of Pl. of Kent*, p. 18. t. 2. f. 2. (*viz* Linn.) *S. spathulata* Hook. *Brit. Fl. S. Limonium* *β.* *E. Fl.* v. ii. p. 116.

On rocks and cliffs (always?), near the sea. Coast of Kent; in several places; Harwich; rocks, near Holyhead; St. Bees' Head, near Whitehaven; Devon; Somerset. Mull of Galloway, and south of Clanyardfell, Wigtonshire; Scotland. Dublin, and N. of Ireland. Jersey and Guernsey. *℥.* 7, 8. — This has been lately divided into two species by Boissier: 1. *S. Dodartii* Gir., sterile branches none, spikes thick and densely imbricated. 2. *S. occidentalis* Lloyd, some of the lower branches sterile, spikes slender. We find every intermediate form among our British specimens: it is true that Boissier adduces some other characters, but these we cannot

perceive in any of them. According to Boissier, who had examined the specimens, the *S. spathulata* of Desfontaines is quite a different species (although the characters sufficiently accord), so that we resume the appellation given by G. E. Smith, in place of the more modern one of Girard adopted by Boissier in De Candolle's Prodrômus. The macro of the leaves is small, always or usually dorsal just below the extremity.

4. *S. Cáspia* Willd. (*matted Thrift*); leaves spathulate, scapes paniculated almost from the base with numerous slender zigzag distinctly bracteated branches, of which the upper ones only bear flowers, axils of the branches acute-angled, flowers crowded, calyx with ovate cuspidate toothed segments without intermediate teeth. *S. reticulata* Sm. (not Linn. *Sp. Pl.*) *E. B.* t. 328.

Muddy salt-marshes, rare. Norfolk, principally at Cley, and Wisbeach. 4. 7, 8. — Much smaller than either of the two last, with very short leaves. Scapes several from the same root, remarkable for their numerous, slender, entangled, barren branches, and small crowded flowers, in second terminal spikes. *S. reticulata* L., a Maltese plant, as far as regards the character in the *Spécies Plantarum* and reference to the figures in Boccone and Plukenet is, according to Boissier, the *S. cancellata* Bernh., a species with acute lobes to the calyx: we do not know what is preserved in the Linnean herbarium. The identity of the British plant with *S. Cáspia* W. was pointed out in former editions of this Flora.

## ORD. LXVIII. PLANTAGINACEÆ Juss.

Sometimes monœcious. *Calyx* (of the perfect and staminate flowers) 4-partite. *Corolla* scarious, 4-lobed. *Stamens* 4, or rarely 1, alternate with the segments of the corolla. *Filaments* exserted. *Ovary* 1-celled with 1 ovule, or 2-celled with 4 or many ovules. *Style* and *stigma* simple, the latter rarely divided. *Capsule* opening transversely, 2- or 4-celled, with 2—4 or many seeds; or hard and indehiscent, 1-celled, 1-seeded. *Seeds* peltate, inserted on the dissepiments or at the base of the cell, rarely erect. *Embryo* in a fleshy or horny albumen. — *Slightly bitter and astringent.* Seeds mucilaginous.

1. **PLANTAGO.** Flowers perfect. Stamens inserted upon the tube of the corolla. Caps. dehiscent, 2—4-seeded.
2. **LITTORELLA.** Flowers imperfect. Stamens hypogynous. Fruit bony, indehiscent, 1-seeded.

### 1. **PLANTAGO** Linn. Plantain.

*Flowers* perfect. *Cor.* with an ovate tube; limb 4-partite, reflexed. *Stam.* 4, inserted upon the tube of the corolla. *Caps.*



opening transversely, of 2-4 cells, 2-4- or many-seeded. — Named from *planta*, a *plant*, but why applied to any particular one, by the Romans, is unknown. All the species are mucilaginous and astringent.

1. *P. major* L. (*greater P.*); leaves broadly ovate mostly on longish grooved foot-stalks, scape rounded, spikes long cylindrical, sepals with a prominent dorsal nerve, capsule 2-celled with the dissepiment plane, each cell many-seeded. *E. B. t.* 1558. — *β. microstachya*; scape shorter than the leaves, spike lax with about 3—6 flowers.

Pastures and road-sides, frequent. — *β.* Turf-bogs, Cunnamara, Ireland, *γ.* 6—8. — *Leaves* all radical, more or less spreading, with 7 nerves (or in *β.* 3 nerves), entire or toothed, glabrous or pubescent. *Petioles* varying in length, sometimes as long as the leaf. *Spike* usually dense. At the base of each flower is a concave *bractea*. *Cal.* of 4 minute *leaflets*. *Caps.* ovate, with 4—8 seeds in each cell.

2. *P. média* L. (*hoary P.*); leaves elliptical pubescent sessile or tapering into short and broad foot-stalks, scape rounded, spike cylindrical, sepals not keeled, capsule 2-celled with the dissepiment plane, cells 1-seeded. *E. B. t.* 1559.

Meadows and pastures in chalky districts in England. Not indigenous in Scotland, but occasionally observed where it had been introduced with grass-seeds. *γ.* 6—10. — *Stamens* long, with dark purple *filaments*. *Spike* shorter than in *P. major*, and more silvery from the shining scarious *corollas*; but a more essential difference exists in the *cells* of the *capsule*, which are only 1-seeded.

3. *P. lanceolata* L. (*Ribwort P.*); leaves lanceolate tapering at both ends, scape angular, spike ovate or cylindrical, bracteas ovate-acute or cuspidate, two of the sepals keeled, tube of the corolla glabrous, dissepiment of the capsule plane, cells 1-seeded. *E. B. t.* 507.

Meadows and pastures, often too abundant. *γ.* 6, 7. — The *leaves* and *scape* yield strong fibres. The *spike* has its bracteas occasionally, by luxuriance, converted into leaves; and sometimes a new scape and spike grow out horizontally from among the bracteas. The spike varies much in form: it is usually short, ovate or oblong-cylindrical, but in sandy places at a considerable elevation on the mountains, becomes quite globose: on the other hand there is a luxuriant variety found at Lamb-islet, Bay of Dublin, with the scape often 2 feet high, and the spike very long, and truly cylindrical (*P. altissima* L.).

4. *P. maritima* L. (*Sea-side P.*); leaves linear grooved fleshy convex below, scape rounded, spike cylindrical, bracteas ovate-acuminate, sepals not winged, tube of the corolla pubescent, capsule 2-celled with the dissepiment plane, cells 1-seeded. *E. B. t.* 175. — *β. major*; leaves almost plane inclining to lan-

ceolate toothed glabrous, scape densely hairy.—*γ. minor*; leaves linear-lanceolate densely hairy as well as the scape.

Grassy pastures by the sea-side; frequent near the margin of fresh-water lakes and at the bases of mountains sloping down to them, as in Glen Dochart, Glen Lochy, and by Loch-Lomond; also on the summits of the highest mountains.—*β*. On the island of Cumbray, among rocks.—*γ*. On rocks by the House of Skail, Pomona, Orkney. 4. 6—9. — Varying much in size and in the breadth and hairiness of its leaves and scapes: sometimes the leaves are almost filiform, often lanceolate; in the curious var. *γ*. found in Orkney, they are clothed with short dense hairs; they are always very succulent, and either entire or toothed.

5. *P. Corónopus* L. (*Buck's-horn P.*); leaves linear pinnatifid or toothed, scape rounded, bractæas ovate-subulate, lateral sepals with a ciliated membranaceous wing at the back, dissepiment of the capsule with 4 angles (thus forming 4 cells), cells 1-seeded. *E. B.* t. 892.

Gravelly sterile soils, inland and upon the coast. ☉. 6, 7. — Leaves mostly spreading, very variable in size and pubescence, pinnatifid; segments often toothed or again divided. Scape hairy. Spike mostly cylindrical and slender. In small specimens from Staffa, the spike is ovate, composed of not more than 7 or 8 flowers; whilst the leaves and scapes are quite hispid.

## 2. LITTOREËLLA Linn. Shore-weed.

*Monœcious*.—*Barren fl.* Cal. of 4 leaves. Cor. 4-fid, tube cylindrical. Stam. 4, hypogynous.—*Fertile fl.* Cal. 0 (unless three bractæas can be so called). Cor. urceolate, contracted at the mouth, 3—4-cleft. Style very long. Fruit hard and somewhat bony, indehiscent, 1-celled, 1-seeded. — Named from *littus*, the shore; from its place of growth.

### 1. *L. lacustris* L. (*Plantain S.*); *E. B.* t. 468.

In watery, sandy, and stony places; particularly abundant on the margins of the Highland lakes, where it forms a green turf. 4. 6. — Leaves all radical, linear, fleshy, semicylindrical, about 2 inches long. Sterile flowers stalked, solitary, sometimes 2 (*Mr. W. Wilson*), upon a scape 2—3 inches long. Fertile fl. sessile in the axils of the leaves, surrounding the sterile peduncles. Germen oblong, green. Style very long, filiform. Stigma a mere point.

SUB-CLASS IV. MONOCHLAMYDEÆ.<sup>1</sup> (ORD. LXIX.—LXXXVII.)

*Flowers incomplete. Perianth single; in other words, the Calyx and Corolla forming but one floral covering, or altogether wanting.*

CONSPECTUS OF THE ORDERS.

A. *Barren flowers neither in catkins nor cones; fruit not surrounded by a hardened or prickly involucre. Style or stigma present.*

\* *Ovaries superior, several, distinct, each 1-celled.*

- [1. RANUNCULACEÆ. Stamens hypogynous. Leaves without stipules.  
27. ROSACEÆ. § SANGUISORBIDÆ. Stamens perigynous. Stipules cohering with the petiole.]

\*\* *Ovary superior, solitary, 1-celled.*

† *Ovules 5 or more. Fruit capsular, opening by valves.*

- [66. PRIMULACEÆ. Perianth campanulate. Style 1.  
14. CARYOPHYLLACEÆ. § ALSINEÆ. Sepals distinct or nearly so. Styles several.]

†† *Ovule solitary (or rarely 2). Fruit indehiscent. Leaves with stipules.*

72. POLYGONACEÆ. Stipules forming a sheath round the stem or branch.  
[27. ROSACEÆ. § SANGUISORBIDÆ. Stipules cohering with the petiole.  
34. PARONYCHIACEÆ. Stipules free, scariosæ, permanent. Flowers perfect.]  
80. URTICACEÆ. Stipules free, membranaceous, usually deciduous. Flowers all or some imperfect.

††† *Ovule solitary. Fruit indehiscent or bursting transversely. Leaves without stipules.*

79. CERATOPHYLLACEÆ. Perianth 0. Involucre 10—12-cleft. Embryo straight. Floating plants.  
70. CHENOPODIACEÆ. Perianth 3—5-cleft and herbaceous, or imbedded in the rachis and fleshy. Stamens nearly hypogynous. Fruit an indehiscent utriculus. Embryo curved. Terrestrial plants.  
69. AMARANTHACEÆ. Perianth 3-partite (nearly scariosæ), with external bractæas. Stamens hypogynous. Fruit opening transversely near the base. Terrestrial herbaceous plants.  
71. SOLERANTHACEÆ. Perianth tubular, persistent, at length dry and hardened. Stam. perigynous. Styles 2. Embryo annular. Herbs.  
82. ELÆAGNACEÆ. Perianth of the fruit tubular, persistent, at length succulent. Style 1. Embryo straight. Leaves with shining scales beneath. Shrubs.

<sup>1</sup> From *μονος*, one, or single; and *χλαμύς*, a tunic, or garment.

73. THYMELACEÆ. Perianth tubular, deciduous. Stamens perigynous. Style 1. Embryo straight. Bark tough. Shrubs.

\*\*\* Ovary superior, solitary, with 2 or more cells.

† Fruit 4-lobed and separating into 4 achenes, or capsular, never samaroid.

- [52. MONOTROPACEÆ. Flowers perfect. Cal. 5-sepaled. Stam. 10, hypogynous. Style 1, entire. Seeds many in each cell.  
30. LYTHRACEÆ. Flowers perfect. Cal. campanulate, toothed. Stam. 6, perigynous. Style 1, entire. Seeds many in each cell.]  
78. CALLITRICHACEÆ. Perianth 0. Styles 2. Fruit of 4 indehiscent 1-seeded carpels united at the axis and at length separating.  
77. EUPHORBACEÆ. Flowers imperfect. Styles 2—3. Fruit capsular.

†† Fruit indehiscent.

76. EMPETRACEÆ. Flowers imperfect. Perianth of 2 or more rows of imbricated scales. Stam. about 3. Fruit fleshy. Leaves heath-like.  
[54. OLEACEÆ. Perianth single, 4-cleft, or none. Stam. 2. Style 1. Fruit samaroid. Leaves opposite, without stipules.]  
81. ULMACEÆ. Perianth single, about 5-cleft. Stam. 5 or more. Fruit samaroid. Leaves flat, alternate, with stipules.  
[25. RHAMNACEÆ. Perianth single, 4—5-cleft. Stam. 4—5. Fruit fleshy. Leaves flat.]

\*\*\*\* Ovary inferior, its cells many-seeded.

- [37. SAXIFRAGACEÆ. Stam. 8—10. Styles 2. Ovary imperfectly 2-celled.  
28. ONAGRACEÆ. Stam. 4. Style 1, filiform: Stigma capitate. Ovary 4-celled.]  
75. ARISTOLOCHIACEÆ. Stam. 6—12. Style short: Stigma rayed. Ovary 3- or 6-celled.

\*\*\*\*\* Ovary inferior, its cells 1-seeded.

- [29. HALORAGACEÆ. Limb of pistillate perianth minute. Stam. 1—8. Style or styles filiform, villous. Leaves verticillate. Aquatic plants.]  
74. SANTALACEÆ. Limb of perianth conspicuous. Stam. 4—5. Style glabrous. Leaves alternate. Root woody.

B. Barren flowers in catkins; or fruit surrounded by a hardened or prickly involucre. Ovules and seeds within a closed pericarp. Style or Stigma present.

85. SALICACEÆ. Ovary superior, 1-celled, many-ovuled. Fruit 2-valved. Seeds numerous, comose. Woody plants.  
86. CUPULIFEREÆ. Ovary inferior, with 2 or more cells. Fruit indehiscent, 1—8-seeded. Trees or shrubs.  
84. BETULACEÆ. Ovary superior, 2-celled. Ovules solitary, pendulous. Fruit indehiscent, membranous. Trees or shrubs.  
83. MYRICACEÆ. Ovary superior, 1-celled. Ovule 1, erect or ascending. Styles 2. Perianth 0. Fruit indehiscent, drupaceous. Shrubs.  
82. ELÆAGNACEÆ. Ovary superior, 1-celled. Ovule 1, ascending.

Style 1. Perianth of pistillate flowers tubular, at length succulent. Fruit indehiscent. Shrubs.

[46. COMPOSITE (Genus 47.). Fruit indehiscent. Pistillate flowers surrounded by a prickly involucre. Plants herbaceous.]

C. *Barren flowers in catkins. Fruit in cones; or the seed surrounded by a fleshy involucre. Ovules and seeds not contained within a closed pericarp. Style and Stigma 0.*

87. CONIFERÆ. Scales of barr. catkins (monadelphous filaments) bearing the anther-cells on the under-side, those of the cones (open ovaries) bearing the ovules on the upper surface.

I. *Flowers usually perfect, i. e. each with stamens and pistil.*  
(ORD. LXIX.—LXXV.)

\* *Ovary superior or nearly so.* (Ord. LXIX.—LXXIII.)

## ORD. LXIX. AMARANTHACEÆ.

Sometimes monœcious. *Perianth* 3—5-leaved, usually with small bracteas at the base. *Stamens* 3—5, hypogynous, sometimes monadelphous, opposite to the segments of the perianth. *Anthers* often 1-celled. *Ovary* 1, 1—2-celled, with 1 or several ovules. *Styles* 1 or 0. *Stigma* simple or compound. *Capsule* membranaceous, 1-celled. *Seeds* attached to a free central *placenta*, often stalked. *Embryo* curved round a farinaceous *albumen*.—Herbs, rarely shrubs. *Stems not jointed*. *Leaves without stipules*. *Closely allied in essential character to, but differing in habit from, the following Order.*—Many of the species are used as potherbs.

### 1. AMARANTHUS Linn. Amaranth.

*Flowers* polygamous-monœcious, tribracteated.—*Barren fl. Perianth* single, deeply 3—5-partite. *Stam.* 3—5, distinct: *anthers* 2-celled.—*Fertile fl. Perianth* single, deeply 3—5-partite. *Styles* 3 or 2. *Utricle* with 1 vertical *seed*, bursting all round transversely.—Named from α, not, μαραινω, to fade, or, flowers which do not fade; they are commonly called “Everlasting Flowers.”

1. A. \**Blitum* L. (*wild A.*); flowers 3-cleft and triandrous in small axillary clusters the segments very obtuse, leaves long-stalked obovate obtuse attenuated at the base, perianth as long as the bracteas and half the length of the utricle which is 2—3-toothed and wrinkled at the apex, stem erect or ascending angled and furrowed. *E. B. t.* 2212.

Low waste grounds and near dunghills, appearing occasionally about Cambridge, London, and in Huntingdonshire. ☉. 8. — An extremely misunderstood species, of which we have seen no British specimen: several other half-naturalized plants are probably often collected for it.

(*A. retroflexus* L. has been found near Hertford, and Sawbridge-worth, but has no title to a place in the flora of this country: it is scarcely a European plant, but rather an American one.)

## ORD. LXX. CHENOPODIACEÆ.

Sometimes monœcious or polygamous. *Perianth* free, generally deeply cleft and without bractæas at its base. *Stamens* mostly 5 (in *Salsola* 2 or 1). *Stamens* from the base of the perianth, and opposite to the segments: *anthers* 2-celled. *Ovary* 1, 1-celled, with a single *ovule*. *Style* divided, rarely simple. *Fruit* indehiscent (usually a *utricle*, sometimes a *berry*). *Seed* 1, at the base of the cell. *Embryo* spiral and without *albumen*, or curved round a farinaceous *albumen*.—Herbs, rarely shrubs; without *stipules*. Flowers *small*, *inelegant*.—In this Order are many potherbs, some are tonic and antispasmodic. The seeds of *Chenopodium* are employed in the preparation of Shagreen; *C. Quinac* is a most extensively used article of food in Peru; *C. ambrosioides* and *C. Botrys* contain an essential oil; *C. anthelminticum* yields *Wormseed oil*, a powerful vermifuge, as its name implies; and *C. olidum* exhales pure *Ammonia*. *Atriplex hortensis* is the *Garden Orache*; *Spinachia*, the *Spinach*; *Beta*, the *Beet*. All yield carbonate of soda and hence *Barilla*. From *Beet-roots* is extracted the very fine sugar now extensively manufactured in France.

\* *Stem jointed.* (*Embryo annular.*)

4. SALICORNIA. Stam. 1—2.

\*\* *Stem continuous. Leaves semicylindrical or terete.* (*Embryo spiral.*)

5. SUÆDA. Segments of the perianth remaining unaltered.

6. SALSOLA. Segments of the perianth at length with a dorsal transverse wing.

\*\*\* *Stem continuous. Leaves flat.* (*Embryo annular.*)

† *Flowers all similar and mostly perfect.*

1. BETA. Lower half of the ovary and utricle adhering to the perianth.

2. CHENOPODIUM. Ovary and utricle free from the perianth.

†† *Flowers imperfect: all, or some of the pistillate ones, of a different form.*

3. ATRIPLEX.

**SUB-ORD. I. CYCLOLOBEÆ.** *Embryo annular, curved round the (usually) copious albumen.*

**Tribe I. CHENOPODEÆ.** *Flowers uniform, mostly perfect. Stem continuous.* (Gen. 1, 2.)

1. **BÉTA** Linn. Beet.

*Perianth* single, 5-cleft, persistent. *Stam.* 5. *Utricle* reniform, imbedded in the fleshy base of the calyx. — Name from the Celtic *bwyd*, or *biadh*, food or nourishment, being used for that purpose.

1. *B. vulgaris* L. (common *B.*); stems erect or procumbent at the base angled branched, spikes longish narrow somewhat erect leafy paniced, flowers 1—4 together sessile, when in fruit 2—3 cohering, segments at length keeled and inflexed at the summit. *B. maritima* L.: *E. B.* t. 285.

Sea-shores, especially in a muddy soil. England; and the south principally, of Scotland. ♂ or ♀. 6—9. — *Root* large, thick, and fleshy. *Stem* tall. *Root-leaves* subovate, succulent, entire, waved, upper cauline ones nearly sessile, oblong. *Spikes of flowers* numerous, leafy: leaves small, at the base of each flower or pair of flowers, which are greenish. *Styles* usually 2. — Moquin-Tandon has at length satisfied himself that the *Sea-Beet* is the wild form of the cultivated *Beet*; Smith observes that, according to Linnæus, *B. maritima* differs from *B. vulgaris* in the keel of the calyx being entire. The present is esteemed a wholesome food when boiled. Mr. W. Wilson finds that there are always 3 styles, and that the germen is 3-sided, that the flowers are often 3 together, and that when the seed is ripe the germen becomes purple and granulated.

2. **CHENOPODIUM** Linn. Goose-foot.

*Flowers* usually all perfect. *Perianth* nearly uniform, usually 5- (sometimes 2—4-) cleft, persistent and unaltered, or at length fleshy, closing upon the fruit. *Ovary* and *fruit* free from the perianth. *Seed* lenticular. (*Leaves* flat. *Bractæas* under each flower none.) — Named from *χην*, *χηνος*, a goose, and *πους*, a foot; from the shape of the leaves in some species. They are more or less employed as potherbs.

\* *Seeds horizontally compressed.* *Chenopodium* Moq.

† *Leaves undivided.*

1. *C. olidum* Curt. (stinking *G.*); leaves ovate-rhomboid entire mealy, flowers in dense clustered leafless spikes, stem diffuse. *E. B.* t. 1034. *C. Vulvaria* L.

Waste places and under walls, especially near the sea on the E.

side of both England and Scotland. ☉. 8, 9. — *Leaves* small, petiolate, greasy to the touch and covered with a pulverulent substance, which, when bruised, yields a detestable odour, resembling that of putrid fish. *Seeds* very small, shining, slightly rough.

2. *C. polyspermum* L. (*many-seeded G.*); leaves ovate-elliptical sessile, spikes axillary elongated subcymose. —  $\alpha$ . stems all prostrate, leaves obtuse, spikes cymose leafless. *C. polyspermum* *E. B.* t. 1480. —  $\beta$ . stem erect, leaves acute, spikes leafy scarcely cymose. *C. polyspermum* *Curt.* *C. acutifolium* *E. B.* t. 1481.

$\alpha$ . Cornwall. —  $\beta$ . not unfrequent in England, in waste places and among rubbish, and on ballast-hills. ☉. 8, 9. — The spikes of *flowers* are more or less cymose, sometimes leafy and leafless upon the same individual; so that we cannot assent to the opinion that the *C. acutifolium* is distinct from *C. polyspermum*, of which Wallroth, an excellent observer, says “*variat foliis ovatis, obtusis, emarginatis, rubro-marginatis, acutis; cymis aphyllis et foliosis expansis.*” It is remarkable for its very numerous, dark brown, shining, minutely dotted *seeds* (which are obtuse at the margins), in part only enveloped by the perianth.

†† *Leaves toothed, angled or lobed.*

3. *C. úrbicum* L. (*upright G.*); leaves triangular toothed or nearly entire, spikes long erect approaching the stem sub-simple nearly leafless, flowers scattered on the spikes, edge of the seeds obtuse. —  $\alpha$ . leaves with short triangular teeth. —  $\beta$ . leaves with large acute teeth. *E. B.* t. 717. *C. intermedium* *Mert. et Koch.*

$\alpha$ . Near Oxford (Sm.) —  $\beta$ . Waste places, under walls, and about towns and villages. Scarcely indigenous in Scotland. ☉. 8, 9. — *Stem* erect, angular. *Leaves* large, truncate or subcuneate at the base, of a light or subglaucous green, their margins in *var. β*. deeply and irregularly toothed. *Flowers* in rather small, but remote clusters, on very long straight erect spikes. *Seeds* minutely rough, coated very tightly with the papillose, fragile *utricle*, large in comparison with those of the following species, “almost as big as rape-seed:” *Curtis.*

4. *C. murále* L. (*Nettle-leaved G.*); leaves shining ovate approaching to rhomboid acute sharply toothed entire at the base, spikes divaricately branched cymose leafless, seeds opaque minutely granulated acutely keeled at the edge. *E. B.* t. 1722.

Waste places near towns and villages. Not found in Scotland. ☉. 8, 9. — Branches of the *spikes* spreading. *Flowers* rather distant. Smell unpleasant.

5. *C. híbridum* L. (*Maple-leaved G.*); leaves subcordate angulate-dentate acuminate, teeth large distant, spikes very much branched subcymose divaricated leafless, seeds opaque dotted, their edge obtuse and not keeled. *E. B.* t. 1919.



Waste places and in cultivated fields, not common; about London, Colchester, Dedham, Ely, and Edinburgh. ☉. 8. — *Stems* slender. *Leaves* large, with very prominent teeth or angles. *Spikes* similar to the last, but the branches are more remote and spreading, and the margin of the seed is different.

6. *C. album* L. (*white G.*); leaves ovate inclining to rhomboid sinuate-toothed entire at the base, upper ones oblong perfectly entire, spikes branched somewhat leafy, seeds smooth shining bluntly keeled at the edge. — *α.* leaves mealy, axillary spikes dense. *E. B.* t. 1723. — *β.* leaves green more entire, spikes elongated more branched. *Sm.* *C. viride* L.

Waste places, dunghills, &c., common. ☉. 7–9. — *Leaves* covered with a whitish and mealy substance, varying in their width, and in the erosion, or blunt toothing, of the upper half of their margins. When they are green and nearly entire it is the *C. viride* L.

7. *C. ficifolium* Sm. (*Fig-leaved G.*); leaves long stalked deltoid cuneate at the base toothed and sinuate at the margin thin, lower ones hastate 3-lobed lobes ascending, middle ones elongated, upper ones oblong, uppermost linear quite entire, seeds shining dotted their edge obtuse and not keeled. *E. B.* t. 1724.

Dunghills and waste ground, about London and Yarmouth. ☉. 8, 9. — Hudson and Moquin-Tandon refer this to the obscure *C. serotinum* L., which, however, Sir James Smith says is a Spanish plant, not yet found in Britain, but Linnæus himself considered the English plant to be the same.

**\*\* Seeds vertically compressed. Blitum Moq.**

8. *C. glaucum* L. (*Oak-leaved G.*); leaves all oblong toothed and sinuated at the margin glaucous and mealy beneath, spikes erect mealy simple leafless, stigmas short, seed minutely reticulate-rugose. *E. B.* t. 1454.

Waste ground, especially on a sandy soil about London; also in Dorsetsh., Isle of Wight, Sussex, Durham, Northumberland, and Glamorganshire. ☉. 8. — *Seeds* minute. *Perianth* 4–5-partite in some (perhaps only the terminal) *flowers*, with the seed horizontal, as in the *E. Bot.* figure, sometimes 2–3-partite, when the seed appears to us to be always vertical. "*Stam.* 1–3:" *Wils.*

9. *C. rubrum* L. (*red G.*); leaves triangular somewhat rhomboid toothed and serrated, spikes erect compound leafy, flowers crowded on the spikes, stigmas short, seeds smooth shining. — *α.* leaves usually rhomboid irregularly toothed, edge of the seeds obtuse and slightly keeled, stem erect. *E. B.* t. 1721. — *β.* *botryodes*; leaves triangular shortly attenuated at the base scarcely toothed, edge of the seeds acutely keeled, stems prostrate. *C. botryodes* *Sm.*: *E. B.* t. 2247.

*α.* Dunghills and under walls; also in salt-marshes. Rare (if

indigenous) in Scotland. — *β.* waste ground near the sea; Yarmouth, Lowestoft, South Shoebury. ☉. 8, 9. — *Stems* frequently reddish. *Leaves* always more or less attenuated at the base, by no means truncate. *Spikes* very compound, thick. The salt (or alkali) contained in the juice of this plant crystallizes upon the surface of the stem. *Perianth* in 2—3 deep segments, with vertical *seeds*, in the lateral flowers; the terminal ones are usually 5-partite, with the seed horizontal; others are 4-partite. The *seeds* are small, smooth, enveloped in the loose thin *utricle*.

10. *C. Bonus Henricus* L. (*Mercury G.*, or *good King Henry*); leaves hastate-triangular (mostly) entire, spikes compound terminal and axillary erect leafless, stigmas elongated, fruit longer than the perianth, seed dotted with the edge obtuse. *E. B.* t. 1033.

Waste places and way-sides, frequent. 4. 5, 6, and partially 6—8. — *Stems* 1 ft. high, striated. *Leaves* large, dark, green, used, when boiled, instead of *spinach*. *Perianth* quite campanulate, 5-cleft half-way down. \* *Seed* always vertical, coated with a true pellicle, besides the capsular integument, on removing which the seed is smooth and shining: *Wils.*

Tribe II. ATRIPLICEÆ. *Flowers imperfect. Stem continuous.* (Gen. 3.)

### 3. A'TRIPLEX Linn. Orache.

*Flowers* monœcious or diœcious. — *Sterile fl.* *Perianth* 3—5-partite, without bractœas. *Stam.* 5. *Style* 0. — *Fertile fl.* sometimes of two kinds. 1. *Perianth* 5-partite, without bractœas. *Stam.* usually 0. *Style* bipartite. *Ovary* free from the perianth. *Seed* horizontally compressed. 2. *Perianth* single, of 2 valves (or 0, with 2 bractœas, *Mog.*). *Stam.* 0. *Utricle* covered by the persistent enlarged *perianth*. *Seed* vertically compressed. — Named from *α*, *not*, and *τρέφειν* to *nourish*. (The second kind of fertile flowers is always present; the first kind occurs in very few species.)

\* *Fertile flowers* all very dissimilar from the sterile ones; their *perianth* of 2 valves, united to the apex, more or less toothed. *Seed* acute. *Radicle* superior. *Obione*.

1. *A. portulacoides* L. (*shrubby O.*, or *Sea Purslane*); stem shrubby, leaves obovate-lanceolate entire silvery-white, perianth of the fruit very shortly stalked inversely triangular rounded below 3-toothed at the apex. *E. B.* t. 261. *Halimus* Wallr. *Obione* *Mog.*

Muddy sea-shores, England and Ireland. Mull of Galloway, and near Helensburgh, Scotland. 4. 8—10. — *Stem* 1—2 ft. and more high, with small, yellowish flowers in axillary spikes.

2. *A. pedunculata* L. (*stalked Sea O.*); stem herbaceous zig-

zag with spreading branches, leaves obovate-lanceolate upper ones narrower, perianth of the fruit cuneate on long stalks 3-lobed at the apex, the lateral lobes recurved larger than the middle ones. *E. B. t.* 232. *Halimus Wallr.* *Obione Moq.*

On the east and south coast of England, in muddy salt-marshes, Kent, Suffolk, Norfolk, Lincoln, and Cambridgesh. Cunnamara, Ireland. ☉. 7, 8. — Whole plant covered with scaly mealiness. This is well distinguished from all the other species by its long peduncles and the peculiar shape of the seed-bearing perianth, especially when the fruit is ripe.

\*\* Fertile flowers all very dissimilar from the sterile ones; their perianth of 2 valves nearly distinct or united to the middle. Seed lenticular. Radicle inferior or lateral. *Atriplex*.

† Stem uniformly (buff-) coloured.

3. *A. laciniata* S. (*frosted Sea O.*); stem herbaceous spreading procumbent, leaves triangular rhomboidal dentate-sinuate very mealy beneath, spike of sterile flowers dense leafless, fertile flowers axillary, perianth of the fruit rhomboidal 3-ribbed and often tubercled at the bark, seeds finely granulated. *E. B. t.* 165. *A. rosea Moq.* *A. arenaria Woods.*

Sandy sea-shores, not uncommon. ☉. 7, 8. — Whole plant hoary. A distinct species, which we have no hesitation in considering to be that of Linnæus, not only on the authority of one authentic specimen in his herbarium, but because his "*flores feminei axillares geminae*" clearly apply to this and not to *A. laciniata* of Moquin-Tandon and of most continental botanists.

†† Stems green, with resinous usually reddish stripes.

‡ Lower leaves with lateral, spreading or ascending lobes.

4. *A. rósea* L. ? (*spreading-fruited O.*); "stem herbaceous spreading procumbent or ascending with spreading branches, leaves mealy ovate-triangular somewhat 3-lobed unequally sinuate-dentate, upper ones lanceolate dentate and 3-lobed at the base or nearly entire, perianth of the fruit rhomboid acute toothed with 2 irregular rows of tubercles on the back, spikes axillary and terminal few-flowered, seeds tubercular rugose." *Bab. in E. B. S. t.* 2880.

Sea-coast, common. ☉. 7—9. — Probably not the species so called by Linnæus, of which he himself does not appear to have seen specimens; and it is not that of Moquin-Tandon. We doubt if it be distinct from the next, with which Smith and most others united it; but we give Mr. Babington's character. Mr. Woods suspects it may be the *A. crassifolia* Moq. from the Altaic mountains, which however seems, from the description, merely *A. patula*.

5. *A. patula* L. (*spreading Halberd-leaved O.*); stem herbaceous erect or spreading, lower leaves triangular-hastate with

two horizontally spreading lobes irregularly toothed, the upper ones nearly entire, perianth of the fruit toothed or entire on the margin slightly tuberculate on the back, spikes nearly simple interrupted, seeds mostly dark brown and wrinkled. *E. B. t.* 936. *A. hastata* Sm.

Cultivated and waste ground and in salt-marshes, common. ☉. 6—10. — *Branches* long, striated. *Flowers* in small clusters on long interrupted axillary spikes. *Perianth* of the fruit variable: in each spike there are usually two kinds, those below are larger with a dark brown wrinkled seed, those towards the extremity smaller with a black shining perfectly smooth seed. We quite agree with Moquin-Tandon that this is the *A. hastata* L.; while *A. patula* L. is, according to the Linnæan description, *A. angustifolia* Sm.; but as the specimen named *A. patula* in the Linnæan herbarium is the present species, we follow Smith's nomenclature.

6. *A. deltoidéa* Bab. (*triangular-leaved O.*); stem herbaceous prostrate or erect with ascending branches, lower leaves hastate-triangular unequally toothed, perianth of the fruit entire or toothed usually muricate on the back, spikes nearly simple collected into a branched many-flowered panicle, seeds all shining smooth. — *α.* stem erect with ascending branches, leaves all triangular hastate toothed, perianth toothed muricate on the back. *E. B. S. t.* 2860. — *β.* stem erect or ascending with ascending branches, upper leaves subulate-hastate entire, perianth entire rough on the back. *A. microsperma* W. et K. — *γ.* stems and branches prostrate, upper leaves lanceolate entire, spikes only slightly branched. *A. prostrata* Bouch.

*α.* Cultivated and waste land in the south of England, not uncommon. — *β.* near Bath. — *γ.* sea-coast, rare. ☉. 7—10. — *Seeds* uniform, black and wrinkled, not half so large as the wrinkled chestnut ones of *A. patula*, although similar to the small seed of that species, of which it may be only a variety.

7. *A. angustifolia* Sm. (*spreading narrow-leaved O.*); stem herbaceous erect or prostrate, lower leaves with two ascending lobes from a wedge-shaped base, upper ones lanceolate entire, seeds smooth and shining. — *α.* lower leaves entire, perianth of the fruit rhomboidal with ascending lateral angles entire smooth on the back, spikes nearly simple interrupted. *E. B. t.* 1774. — *β.* lower leaves sinuate-toothed, perianth of the fruit rhomboidal denticulate usually tuberculate on the back, spikes branched dense many-flowered. *A. erecta* Huds.: *E. B. t.* 2223.

Cultivated and waste ground. ☉. 7—10. — Perhaps only a narrow-leaved var. of *A. patula*.

‡‡ None of the leaves lobed.

8. *A. littoralis* L. (*Grass-leaved Sea O.*); stem herbaceous erect, leaves lanceolate entire or toothed, perianth of the fruit

toothed muricate at the back.—*α*. leaves linear-lanceolate, perianth of the fruit ovate-rhomboid acute spreading at the point. *E. B. t.* 708.—*β*. leaves ovate-lanceolate, perianth of the fruit obcordate-triangular obtuse closed. *A. marina* L.

Muddy salt-marshes, chiefly on the east coast. ☉. 7—9.—The under-sides of the *leaves* and the *flowers* are mealy: the latter grow in rather crowded, axillary and terminal *spikes*. Mr. Woods mentions that he has met with horizontal seeds in this species, which he supposes were produced by flowers similar to the sterile ones: he also states that the *var. α*. alone is found at Lewes, while *β*. is plentiful on the banks of the Thames.

\*\*\* *Fertile flowers of two kinds.* Dichospermum.

9. *A. nitens* Rebert (*shining-leaved O.*); stem herbaceous erect branched, leaves triangular acuminate shining above glaucous beneath, lower ones cordate-hastate, upper deltoid somewhat auricled, uppermost lanceolate, perianth of the fruit ovate-acuminate entire smooth on the back thin and finely reticulated.

Sea-shore near Ryde, Isle of Wight; *Dr. Bromfield*. ☉. 8, 9.—A large, coarse species, probably introduced: it is common in the east of Germany, but grows as far west as Hamburgh: *Woods.*;

(*A. hortensis* L., a very closely allied species, has been found at Saffron Walden, and in some other places, but cannot be said even to be naturalized.)

### Tribe III. SALICORNEÆ. *Flowers uniform, perfect. Stem jointed.* (Gen. 4.)

#### 4. SALICORNIA Linn. Glasswort.

*Perianth* single, turbinate, fleshy, obscurely lobed, imbedded in an excavation of the *rachis*. *Stam.* 1—2. *Style* short. *Stigmas* bi-trifid. *Fruit* a *utricle*, included in the enlarged *perianth*.—Named from *sal*, salt, and *cornu*, a horn; from the horn-like branches and saline nature of the plants.

1. *S. herbacea* L. (*jointed G.*); stem herbaceous, articulations compressed somewhat thickened upwards and notched, spikes cylindrical slightly tapering at the extremity.—*α*. stem erect. *S. herbacea E. Fl. v. i. p. 2.* *S. annua E. B. t.* 415.—*β*. stem procumbent. *S. procumbens E. B. t.* 2475.

Salt-marshes, plentiful. ☉. 8, 9.—*Plant* leafless, much branched and jointed; articulations a little thickened upwards, very succulent, shrinking much when dry, in which state the upper extremity of each articulation forms a two-lobed membranous socket or short sheath, which receives the base of the articulation above it. *Spikes of flowers* dense, lateral and terminal, jointed like the stem, and bearing, at the base of every short articulation, on two opposite sides, a cluster of 3

*flowers*, each composed of a single *perianth*, apparently quite closed at the top, and pierced, as it were, by the bi- or tri-fid *stigma* and the single or two *stamens*,—when two, they appear in succession. *Perianth* of the *fruit* with a narrow circular wing near the summit. *Pericarp* thin and adhering to the *seed*, the integument of which is siple. Mr. Wilson observes that the central flower (in the *erect* var. at least) has *two* stamens, one placed below, the other above, the laterally compressed germen; and that the side-flowers have only *one*, placed above the germen.

2. *S. radicans* Sm. (*creeping G.*); stem woody procumbent and rooting, articulations compressed spreading and notched at the top scarcely thickened, spikes oblong obtuse. *E. B. t.* 1691. *S. fruticosa* Sm.: *E. B. t.* 2467.

Muddy sea-shores, rare; on the Norfolk and Sussex coasts. In the Isle of Sheppey, Kent. Near Newry, Ireland. 4. 8, 9. — This plant requires close investigation in a recent state. Smith originally referred our form of it to the *S. fruticosa* Linn., and Moquin-Tandon makes it the *var. β.* of that species. This latter botanist constitutes for it and some other of the perennial species the genus *Arthrocnemum*, which, he says, differs from *Salicornia* in having the pericarp free from the seed which has a double integument, and in the perianth not being winged. In *Salicornia*, he further observes that the embryo is thick and conduplicate; whereas in *Arthrocnemum* it is half a ring.—The various species of this genus, as well as others belonging to the same natural family, and growing abundantly on the coasts in the south of Europe and north of Africa, yield a vast quantity of soda, much employed in making both soap and glass, whence comes their English name, *Glasswort*.

SUB-ORD. II. SPIROLOBEÆ. *Embryo spiral; albumen none or in small quantity.*

Tribe IV. SUÆDEÆ. *Seed with a double integument. Embryo in a flat spiral. Stem continuous. (Gen. 5.)*

5. SUÆDA Forsk. Sea-Blite.

*Flowers* usually perfect, bibracteate at the base. *Perianth* 5-partite, at length inflated and often fleshy (without appendages or a wing at the back). *Stam.* 5. *Style* 0. *Stigmas* usually 3. *Utricle* covered by the perianth. *Seed* lenticular; integument double, outer one crustaceous. (*Leaves* semicylindrical.)—Name:—*sued* is the Arabic appellation of one of the species, all of which yield *Soda*.

1. *S. fruticosa* Forsk. (*shrubby S.*); leaves obtuse, styles 3 often combined at the base, seeds smooth shining vertical, stem erect shrubby. *Salsola* L.: *E. B. t.* 635. *Chenopodium Schrad.* *Schoberia* Mey.

On the Norfolk coasts, especially at Cley; and those of Suffolk, Dorset, Hants, Devon, and Cornwall, but rare. *h.* 7—10. — *Stem* 3 ft. high or more, with many erect, leafy *branches*. *Flowers* in small axillary clusters, sometimes solitary. *Perianth* unchanged in fruit, as in the following species.

2. *S. maritima* Dumort. (*annual S.*); leaves usually acute, styles 2, seeds reticulate-striated horizontal, stem herbaceous diffuse. *Chenopodium* L.: *E. B.* t. 633. *Chenopodina* Moq. *Schoberia* Mey.

Sea-shore, frequent. ☉. 7—9. — A much smaller plant than the last and annual. *Flowers* solitary, or two in the axils of the leaves, and each subtended by two small, ovate, acute, narrow *bracteas*. Moquin-Tandon separates his new genus *Chenopodina* from *Suaeda* almost solely on account of the seeds being horizontal, not vertical.

Tribe V. SODEÆ. *Seed with a simple integument. Embryo in a conical spiral. Stems continuous or jointed.* (Gen. 6.)

#### 6. *SALSOLA* Linn. Saltwort.

*Flowers* perfect, bracteated at the base. *Perianth* single, inferior, 5-partite, persistent, enveloping the *utricle* with its base, and crowning it with its *limb* which has a broad scariose dorsal wing. *Stam.* 5. *Styles* 2. *Seeds* horizontal; integument simple, membranaceous. — Named from *sal, salt*. From many of this tribe alkaline salt is abundantly obtained, as implied by the name of our only British species.

1. *S. Kali* L. (*prickly S.*); stems herbaceous prostrate, leaves subulate spinous scabrous, flowers axillary solitary, segments of the enlarged perianth cartilaginous as long as their spreading roundish wings. *E. B.* t. 634.

Sandy sea-shores, frequent. ☉. 7. — *Stem* angled, very much branched. *Flowers* pale-greenish, sessile, with 3 leaf-like *bracteas* at the base of each.

#### ORD. LXXI. SCLERANTHACEÆ Link.

*Perianth* of 1 piece, tubular; *limb* 4—5-cleft. *Stamens* 1—10, perigynous, inserted into the mouth of the tube. *Ovary* superior, simple, 1-celled. *Styles* 2, or 1 emarginate at the apex. *Ovules* solitary, or rarely 2, suspended from the apex of a free filiform column or cord that arises from the bottom of the cell. *Fruit* a *utricle*, inclosed within the hardened tube of the perianth. *Seed* solitary. *Embryo* cylindrical, curved round the farinaceous *albumen*. — *Small inconspicuous* herbs. *Leaves opposite, without stipules. Flowers minute.*

1. *SCLERANTHUS* Linn. Knewel.

*Perianth* 5-cleft. *Stam.* 10; 5, or more, frequently abortive or wanting. *Styles* 2.—Named from *σκληρος*, *hard* and *αθος*, a *flower*, from the indurated nature of the floral covering.

1. *S. annuus* L. (*annual K.*); calyx of the fruit with erect or erect-patent rather acute segments edged with a narrow white membrane, stems spreading, root annual. *E. B. t.* 351.

Corn-fields, frequent. ☉. 7.—*Stems* many, much branched in a dichotomous manner, slender, green, subpubescent, straggling. *Leaves* linear-subulate, keeled, opposite and combined at the base by a membranous fringed margin. *Flowers* green, inconspicuous, in axillary, leafy clusters. *Perianth* urceolate, ribbed, with 5 ovate-lanceolate teeth, spreading when in flower, almost erect in fruit. We have seen foreign specimens (from Hamburg) precisely intermediate between this and the next.

2. *S. perennis* L. (*perennial K.*); calyx of the fruit with obtuse closed segments edged with a broad white membrane, stems procumbent, root perennial. *E. B. t.* 352.

Open dry sandy fields, in Norfolk and Suffolk. 4. 8—10.—*Stems* simple or irregularly branched, glaucous. The broad white membrane gives the *flowers* a variegated appearance.

ORD. LXXII. POLYGONACEÆ Juss.

Sometimes monœcious or diœcious. *Perianth* free, divided, the segments often in a double row. *Stamens* definite, but varying in number, from the base of the perianth. *Ovary* superior, with 2 or more *styles* or sessile *stigmas*. *Achene* frequently 3-angular or lenticular, with one erect *seed*. *Embryo* in a farinaceous *albumen*, often lateral.—Herbaceous, rarely shrubby plants, with *sheathing stipules*!—The stems and leaves are acid and astringent; the roots, in general, nauseous and purgative; while the seeds are very farinaceous and esculent. The *True Rhubarb* belongs to this Order: it is a species of *Rheum* not clearly ascertained.

1. *POLYGONUM* *Perianth* 5-partite. *Styles* 2—3. *Achene* wingless, compressed or triquetrous.

2. *RUMEX*. *Perianth* 6-partite: the three inner segments at length larger, connivent, and covering the triquetrous wingless achene. *Styles* 3.

3. *OXYRIA*. *Perianth* 4-partite: the two inner segments larger. *Styles* 2. *Achene* compressed, with a membranous wing, at length larger than the perianth.

1. *POLYGONUM* Linn. *Persicaria*, *Bistort*, *Knot-grass*, and *Buck-wheat*.

*Perianth* single, in 5 deep, coloured, persistent segments.



*Stam.* 5—8. *Styles* 2—3. *Achene* compressed or trigonous. — Named from *πολυς*, many, and *γονυ*, a knee or joint; from the numerous joints of the stem.

\* *Styles* 3, and the fruit triquetrous. *Stem* simple, with one terminal spiked raceme. *Stipules* truncated. *Root* a rhizoma. *Bistort*.

1. *P. Bistorta* L. (common *B.* or *Snakeweed*); raceme dense cylindrical, leaves subcordate-ovate waved, the radical ones with a winged foot-stalk. *E. B.* t. 509.

Moist meadows in various parts of England, Scotland, and Ireland. *4.* 6—9. — *Stem*  $1-1\frac{1}{2}$  foot high. *Upper leaves* with long sheaths. *Flowers* flesh-coloured, on short foot-stalks, with small bractees at their base. *Stam.* 8. *Styles* 3. *Root* large, tortuose, very astringent.

2. *P. viviparum* L. (*viviparous alpine B.*); spike linear lax bulbiferous at the base, leaves linear-lanceolate the lower ones elliptical petiolate their margins revolute, foot-stalks not winged. *E. B.* t. 669.

Mountain pastures in the north of England, and abundant on the Highland mountains of Scotland. *4.* 6—7. — *Stem* 4—8 inches high, slender. *Spike* linear; lower part of it generally bearing little viviparous bulbs of a fine red colour. *Stam.* 8. *Styles* 3. *Perianth* pale flesh-coloured, almost white. — This species increases much by the bulbs, and little, if at all, by seed, its triquetrous germen proving usually abortive.

\*\* *Styles* 3. *Achene* triquetrous. *Stem* branched. *Flowers* axillary. *Stipules* 2-lobed, at length torn. *Root* fibrous. *Knotgrass*.

3. *P. aviculare* L. (common *K.*); leaves elliptic-lanceolate, stipules much shorter than the internodes with few distant simple nerves, stem herbaceous, achene about as long as and covered by the perianth striated with raised points. *E. B.* t. 1252.

Waste places and way-sides, abundant. ☉. 5—9. — A most variable species.

4. *P. Robèrti* Lois. (*Robert's K.*); leaves distant elliptic-lanceolate flat, stipules much shorter than the internodes with very few distant simple nerves, stem procumbent herbaceous, achenes longer than the perianth protruded quite smooth and shining. *P. Raii* Bab.: *E. B. S.* t. 2805. *P. maritimum* Ray *Syn.* p. 147.

Sandy sea-shores in the west of England, Wales, and Scotland, and about Dublin. ☉. 7—9. — A large straggling species, appearing, as Mr. Babington well observes, exactly intermediate between *P. aviculare* and *P. maritimum*.

5. *P. maritimum* L. (*Sea-side K.*); flowers axillary, leaves crowded elliptic-lanceolate fleshy glaucous revolute at the

margin, stipules about as long as the internodes with numerous branched nerves, stem procumbent woody below, achene longer than the perianth protruded quite smooth and shining. *E. B. S. t.* 2804.

Christ-Church Head, on the sandy shore towards Muddiford. Herm Sands and Jersey; and Grand Havre, Guernsey. Caroline Park, near Edinburgh (only one plant found); *Rev. Mr. Little*. Killiney Bay, near Dublin. 4. 8, 9.

\*\*\* *Styles 3. Achene triquetrous. Stem erect, with cymose panicles. Stipules oblique at the summit. Root fibrous. Buckwheat.*

† *Stem erect, with cymose panicles.*

6. *P. \*Fagopyrum* L. (*common B.*); leaves cordate-sagittate, stem nearly upright without prickles, angles of the fruit even. *E. B. t.* 1044.

Dunghills and about cultivated land. ☉. 7, 8. — *Stem* nearly erect, waved, 1 foot high, branched. *Flowers* in spreading panicles, terminal and lateral, pale-reddish. *Stamens* 8. *Cotyledons* large, foliaceous, contorted and plaited. An excellent food for poultry.

†† *Stems twining. Flowers racemose.*

7. *P. Convolvulus* L. (*climbing B.*); leaves cordate-sagittate, stem twining angular, segments of the perianth bluntly keeled (rarely winged), fruit opaque striated with minute points. *E. B. t.* 941.

Corn-fields, frequent. ☉. 7—9. — Very long, climbing. *Spikes* lateral and leafy, of 4 whorled greenish flowers. The specimens with a winged perianth are of rare occurrence, and chiefly met with in the Isle of Wight,

8. *P. dumetorum* L. (*Copse B.*); leaves cordate-sagittate, stem twining striated, segments of the perianth with a membranous wing, fruit quite smooth and shining on the surface. *E. B. S. t.* 2811.

South of England, but seldom found above a year or two in the same place. Wood at Wimbledon, also at Reygate, and in hedges between Woking Common station and Guildford, Surrey; Torvick, Trotton, and hedge by Wood's Nursery near Maresfield, Sussex; Petersfield, Hants; Framfield, Dorsetsh.; near Keynsham, Somersetshire. ☉. 8, 9. — Too closely allied to the winged variety of the last species.

\*\*\*\* *Styles mostly 2. Achene compressed or triquetrous. Stem usually branched. Stipules truncate. Persicaria.*

† *Root creeping.*

9. *P. amphibium* L. (*amphibious P.*); stamens 6, styles 2, spike dense oblong-ovate, achene smooth shining, leaves petiolate, stipules membranous narrow, root creeping. *E. B. t.* 436. — *α. aquaticum*; leaves floating broadly lanceolate glabrous, spikes oblong. — *β. terrestre*; nearly erect, leaves narrow-lan-

ceolate rough with short rigid appressed hairs on both sides, spikes ovate.

Margins of ponds, lakes, and ditches, and damp ground, frequent. 4. 7, 8. — *Stem* 2—3 feet long, and scarcely branched when growing in the water. *Leaves* arising from long tubular sheaths or stipules, glabrous in  $\alpha$ . but hispid in  $\beta$ . *Spikes* mostly solitary, terminal, of a bright rose-colour. The only perennial species of the *Persicaria* group.

†† *Root annual, fibrous.*

10. *P. Persicaria* L. (*spotted P.*); stamens 6, styles 2—3 connected to the middle, spikes compact ovate-oblong cylindrical erect, peduncles nearly smooth, perianth glandular, achene compressed and gibbous on one side or triquetrous, leaves lanceolate (often spotted), stipules lax strongly fringed. *E. B. t.* 756.

Moist ground and waste places, frequent. ☉. 7—10. — *Stems* erect, branched, 1—2 feet high. *Spikes* terminal and lateral, dense, greenish, the tips of the *flowers* rose-coloured. *Achene* either triquetrous or with a tendency to be so, as shown by the gibbous side. *Leaves* nearly sessile, usually glabrous, but there is a variety with hoary leaves (*P. incanum*).

11. *P. laxum* Reich. (*slender-headed P.*); stamens 6, styles 2 connected at the base, spikes usually elongated and slender erect, peduncles and perianths glandular and scabrous, achene compressed smooth and shining concave on both sides, stem ascending, leaves lanceolate slightly waved tapering at both ends glandular beneath, stipules lax shortly fringed, floral ones with a subulate point on one side. *Bab. in E. B. S. t.* 2822.

Woodford, Essex; Cambridge; Chalk Farm, London; Sussex. Jersey. ☉. 7, 8. — Reichenbach himself seems disposed to consider this a hybrid; Mertens and Koch remark that they have seen forms of *P. lapathifolium* closely resembling it; and Mr. Babington, in *Fl. Sarn.*, says "he suspects it will be found to be a var. of *P. Persicaria*." We possess a specimen from Alsace, agreeing with the above character in every respect, except that the peduncles and perianth are quite free from hairs or glands.

12. *P. lapathifolium* L. (*pale-flowered P.*); stamens 6, styles 2 distinct, spikes oblong-cylindrical dense erect, peduncles and perianth glandular and scabrous, achenes compressed smooth and shining concave on both sides, leaves ovate-lanceolate shortly petiolate, lower stipules not fringed, upper ones shortly fringed. *E. B. t.* 1382.

Fields and dunghills, frequent. ☉. 7, 8. — *Stem* 1—1½ ft. high. A very variable species; but the above characters are constant. Sometimes the *stem* is spotted, and sometimes the *leaf* is hoary. The *flowers* are either pale green, almost white, or of a reddish tint. *Spikes* dense, terminal, and lateral. Mr. Babington describes this with 8 stamens; perhaps, therefore, the number is variable.

13. *P. mite* Schrank (*lax-flowered P.*); stamens 5, styles 2 (rarely 3) combined to the middle, spikes erect usually filiform lax, peduncles smooth, perianth without glands, achene lenticular compressed gibbous on one side slightly wrinkled shining, leaves lanceolate slightly waved, stipules hairy strongly ciliated without glands. *E. B. S. t.* 2867.

About London, Cambridge, and York. ☉. 8. — Allied to *P. minus*, differing from it in the greater size, broader leaves, and larger flowers and fruit, and from *P. Persicaria* by the lax spikes and slightly wrinkled achenes. *Flowers* red.

14. *P. minus* Huds. (*small creeping P.*); stamens 6, styles 2 combined to above the middle, spikes slender lax erect, peduncles smooth, perianth without glands, achene lenticular-compressed smooth and shining, leaves linear-lanceolate plane very shortly petiolate, stipules ciliated without glands. *E. B. t.* 1043.

On gravelly, watery commons; about London, and in Worcestershire, Cheshire, and Lancashire. Very rare in Scotland. Near Cork, Ireland. ☉. 8, 9. — Allied to *P. Hydropiper*, but much smaller, usually procumbent and rooting at the base, with upright spikes, narrower leaves, and nearly undivided stigmas.

15. *P. Hydropiper* L. (*biting P.*); stamens 6, styles 2 nearly distinct, spikes lax filiform at first drooping, peduncles smooth, perianth glandular, achene lenticular-compressed dotted opaque, leaves lanceolate waved, stipules mostly with scattered glands shortly fringed. *E. B. t.* 989.

Frequent by the sides of lakes and ditches. ☉. 8, 9. — *Stem* 1—3 feet high, erect. Remarkable for its slender, long, more or less drooping spikes of distant, reddish flowers; they are lateral and terminal, and are sometimes at length erect.

## 2. RÚMEX Linn. Dock and Sorrel.

*Perianth* 6-partite: the 3 inner segments (of the fruit) large, connivent. *Stam.* 6. *Styles* 3: stigmas multifid. *Achene* triquetrous, covered by the enlarged inner sepals, which often bear tubercles. — Name of unknown origin.

\* *Plants not acid. Flowers perfect, or monacious. Lapathum. Dock.*

1. *R. Hydrolápathum* Huds. (*great Water D.*); enlarged sepals ovate-deltoid reticulated entire each with a tubercle, leaves lanceolate the lower ones cordate at the base, petiole flat not margined above, whorls crowded mostly leafless. *R. aquaticum Sm.*: *E. B. t.* 2104.

Ditches and river-sides, frequent. 2. 7, 8. — The largest on our Docks, 3—5 feet high; some of the lower leaves 1½ ft. long. *Root* large, very astringent. Enlarged sepals with prominent veins, and large oblong tubercles.

2. *R. crispus* L. (*curled D.*); enlarged sepals broadly cordate entire or crenulate reticulated, one only with a perfect large coloured tubercle, leaves lanceolate waved acute, upper whorls leafless. *E. B. t.* 1998.

Way-sides and near houses, pastures, &c., frequent. *¶*. 6—8. *Stem* 2 or 3 feet high. *Lower leaves* the broadest, all waved and crisped at the margins. *Whorls of flowers* very numerous and crowded. Here the enlarged *sepals* are truly cordate. Most authors say that each sepal bears a *tubercle*; but in my specimens, in those gathered by Mr. Wilson in Lancashire, and in some that I have from Switzerland, one alone bears a large oblong orange-coloured *tubercle*, the others have only the midrib a little swollen at the base.

3. *R. pratensis* Mert. et Koch (*Meadow D.*); enlarged sepals unequal cordate dilated toothed at the base with a small entire triangular point, one principally tuberculated, leaves oblong-lanceolate waved, clusters nearly leafless, whorls distinct. *Borr.* in *E. B. S. t.* 2757.

Marshes, in several counties of England, but rare. *¶*. 6, 7. — Most allied to *R. crispus*, but the clusters are less crowded, the enlarged sepals are unequal in size and more distinctly toothed, and the leaves are broader and less curled. Mr. Babington mentions that the enlarged sepals are sometimes all equally tubercled.

4. *R. aquaticus* L. (*grainless Water D.*); enlarged sepals broadly cordate entire or waved membranaceous reticulated without tubercles, leaves lanceolate, the lower ones cordate-oblong crisped and waved, whorls crowded mostly leafless. *Hook.* in *E. B. S. t.* 2698. *R. domesticus Hartm.*

Moist places. North of England and Scotland, not uncommon. *¶*. 7, 8. — Our plant comes very near *R. crispus*, but the enlarged sepals are quite destitute of grains or *tubercles*, in which respect it agrees exactly with the true *R. aquaticus* L., a much misunderstood species.

5. *R. \*alpinus* L. (*alpine D.* or *Monk's Rhubarb*); enlarged sepals cordate-ovate membranous reticulated obscurely toothed at the margin, one usually bearing a small grain, leaves broadly cordate ample obtuse, whorls leafless crowded, flowers monœcious. *E. B. S. t.* 2694. *R. cordifolius Horn.*

Road-side from Helensburgh to the head of the Gare Loch, and in 2 or 3 stations in that neighbourhood; Glen Luss; near Dollar; Glen Farg, Perthshire. One-ash, Derbyshire. *¶*. 7. — Its root was formerly employed in lieu of *Rhubarb*, and much cultivated by the monks and hermits, near whose abodes it is principally met with. *Leaves* a span broad, cordate, very obtuse, wrinkled, and reticulated; *upper ones* ovate-lanceolate; *whorls of flowers* very dense.

6. *R. sanguineus* L. (*bloody-veined*, and (S.) *green-veined D.*); enlarged sepals narrow-oblong obtuse entire, one at least bearing a tubercle, leaves ovate-lanceolate, lower ones somewhat

cordate, whorls distant on long generally leafless branches.—  
*a.* leaves with bright red veins. *R. sanguineus* L.: *E. B.*  
*t.* 1533.—*β.* leaves with green veins. *R. viridis* Sibth.

Shady pastures, woods and road-sides. — *a.* rare. — *β.* more frequent. *γ.* 7.

7. *R. conglomeratus* Murr. (*sharp D.*); enlarged sepals linear-oblong obtuse entire or obscurely toothed all bearing a tubercle, leaves oblong pointed, lower ones cordate or rounded at the base, whorls distant leafy. *R. acutus* Sm.: *E. B. t.* 724.

Watery places, not uncommon. *γ.* 6—8. — Much resembling *var. β.* of the last species, and appearing to differ chiefly in its more leafy whorls and enlarged sepals all constantly-tubercled. Smith considers this to be the *R. acutus* L.; but it can hardly be the species known under that name on the Continent, which has ovate rather acute enlarged sepals, each with a very large red tubercle. It is the *R. Nemolapathum* of Campdera and most Continental botanists, but doubtfully of Ehrhart and Linnæus fil., which is supposed by Smith to be *var. β.* of the last.

8. *R. púlcher* L. (*Fiddle D.*); enlarged sepals triangular ovate reticulated with prominent veins deeply toothed, one of them principally bearing a tubercle, lower leaves panduriform or cordate oblong obtuse, upper ones lanceolate acute, stem spreading. *E. B. t.* 1576.

Pastures, way-sides, &c. *γ.* 6—8. — Stems procumbent; branches very straggling; whorls distant, on slender leafy branches.

9. *R. obtusifolius* L. (*broad-leaved D.*); enlarged sepals ovate or oblong-triangular obtuse toothed at the base, one principally bearing a tubercle, root-leaves ovate-cordate obtuse, upper ones oblong or lanceolate, stem roughish. *E. B. t.* 1999.

Way-sides and waste places, too frequent. *γ.* 7—9. — Stem 2—3 feet high. Whorls rather distant, lower ones somewhat leafy. Distinguishable by its broad and obtuse radical leaves, which are generally crisped at the margins. The entire terminal part of the enlarged sepals is, as Mr. Borrer observes, mostly oblong or almost ligulate. Stem scabrous between the elevated lines or ridges.

10. *R. marítimus* L. (*golden D.*); enlarged sepals narrow deltoid acute, each fringed with 2—4 setaceous teeth and bearing a narrow oblong tubercle, whorls much crowded many-flowered leafy, leaves linear-lanceolate. *E. B. t.* 725.

Marshes, principally near the sea. *γ.* 7, 8. — Well distinguished from every preceding species by its narrow leaves, excessively crowded flowers, bright, almost orange-coloured, enlarged sepals, and their setaceous, almost spinous teeth.

11. *R. palústris* Sm. (*yellow Marsh D.*); enlarged sepals lanceolate rather acute, each with 2—3 short setaceous teeth near the base and bearing a narrow oblong tubercle, whorls remote, leaves linear-lanceolate. *E. B. t.* 1932.

Marshy places, remote from the sea. 4. 7—9. — Nearly allied to the last, from which Sir J. E. Smith considers it to be permanently distinct in the form of the enlarged sepals, and in the number, shape, length, and situation of the *teeth* which border them.

\*\* *Plants acid, Flowers diacious. Acetosa, or Sorrels.*

12. *R. Acetosa* L. (*common S.*); outer sepals reflexed, enlarged ones orbicular-cordate entire membranous reticulated with a minute spherical tubercle at the base, leaves oblong-sagittate. *E. B. t.* 127. ?

Meadows and pastures, frequent. 4. 5—7. — *Stem* 1—2 feet high. *Petals* becoming large, purplish, orbicular-cordate, obtuse, membranous, reticulated with veins; *tubercles* very small, almost obsolete. Sir J. E. Smith says the enlarged sepals are ovate, but he appears to have described a cultivated species, probably the *R. oxyotus* Campd.

13. *R. Acetosella* L. (*Sheep's S.*) sepals ascending, inner ones scarcely enlarged ovate not tuberculated, lower leaves lanceolate-hastate lobes entire. *E. B. t.* 1674.

Dry pastures, frequent. 4. 5—7. — Variable in its height, from 2—10 inches, and in the form of its *leaves*; for, frequently, only the *radical* ones are of the shape above described, at other times many of the *cauline* ones are so too; the rest are lanceolate, more or less petiolate, entire. Every part is much smaller than in the last species. In very dry situations, and at the end of summer, the whole plant becomes of a rich red colour.

(*R. scutatus* L., the French or Garden Sorrel, has been observed near Edinburgh, Hamilton, and several other places, having escaped from cultivation.)

### 3. *OXYRIA Hill; R. Brown.* Mountain-Sorrel.

*Perianth* 4-partite, the two interior segments in front scarcely longer than the others, spreading. *Stamens* 6. *Styles* 2; *stigmas* multifid. *Achene* compressed, surrounded with a membranous wing, much longer than the sepals. — Named from *oxys*, sharp or acid, in allusion to the acid flavour.

1. *O. reniformis* Hook. (*Kidney-shaped M.*). *O. acida* Br. *Rumex digynus* L.: *E. B. t.* 910.

North of England, Wales and Scotland, abundant in alpine situations, especially amongst moist rocks and within reach of the spray of cascades. 4. 7, 8. — *Stems* 8—10 inches high, with rarely more than one leaf, often naked. *Radical leaves* numerous, all reniform, with a more or less evident obtuse sinus at the apex, on long foot-stalks, having membranaceous *stipules* at their base. *Racemes* and *peduncles* branched, with minute, ovate, membranous *bracteas* at the base of each ramification. *Pedicels* thickened upwards. *Flowers* erect, small. *Stamens* 6, shorter than the petals. *Achene* with a remarkably broad winged border, tipped with the *styles* situated in

rather a deep notch, and having at the base the sepals, none of which are enlarged as in *Rumex*. The leaves yield a most agreeably acid flavour, much resembling that of *Wood-Sorrel* (*Oxalis Acetosella*).

### ORD. LXXIII. THYMELACEÆ Juss.

*Perianth* free, tubular, often coloured, 4—5-cleft. *Stamens* inserted upon the tube, definite, when equalling in number the segments of the perianth opposite to them. *Anthers* 2-celled, opening longitudinally. *Ovary* 1, free, 1-celled, with one pendulous ovule. *Style* 1, and *stigma* 1, undivided. *Fruit* an achene, berry, or drupe. *Seed* 1, pendulous. *Albumen* none, or thin and fleshy. *Radicls* superior.—Shrubby, without stipules.—An Order, remarkable for the tenacious character of the inner bark, which is frequently made into paper, especially in India. *Lace-bark* is the same substance of *Lagetta linearia*, and is composed of layers of beautifully reticulated fibres. The bark of all is caustic, acting upon the skin as a vesicatory, and causing excessive pain if chewed.

#### 1. *DAPHNE* Linn. Mezereon and Spurge-Laurel.

*Perianth* single, often coloured, 4-fid. *Stam.* 8. *Fruit* a berry.—Named in allusion to the Nymph *Daphne*, who was changed into a *Laurel*, some of the plants of this genus having the habit of Laurels.

1. *D. Mezereum* L. (*common M.*); flowers subternate lateral sessile appearing before the deciduous lanceolate leaves, tube of the perianth hairy. *E. B. t.* 1381.

Rare, in woods in England. Hampshire (perhaps truly wild), Sussex, Suffolk, Staffordshire, Worcestershire, Berkshire, and Oxfordshire. *h.* 2—4.—The well-known *Mezereon* of our gardens, where its early blossoms and delightful fragrance attract general favour. It forms a bushy shrub, bearing numerous purple flowers which appear before the leaves, and red berries nestled among the foliage. *Flowers* sometimes white.

2. *D. Lauréola* L. (*common S.*); racemes axillary of about 5 glabrous drooping bracteated flowers, leaves lanceolate attenuated at the base glabrous evergreen. *E. B. t.* 119.

Woods, thickets, and hedges throughout England, especially in a clay soil. Rare in Scotland and scarcely indigenous; about Rosslyn and Bothwell. *h.* 1—5.—*Stem* rather stout, erect, 1—3 feet high, but little branched, naked below, leafy above, and hence bearing some resemblance to a Palm. *Flowers* drooping, each accompanied by an ovate concave bracteu. *Berry* ovate, bluish-black, said to be poisonous to all animals except birds.



*Ovary inferior.* (ORD. LXXIV.—LXXV.)

ORD. LXXIV. SANTALACEÆ Br.

*Perianth* adnate with the ovary; its *limb* 3—5-cleft, with valvate æstivation. *Stamens* 3—5, opposite to the segments of the perianth, epigynous. *Ovary* 1-celled, with 1—4 *ovules*, pendulous from near the summit of a free central *placenta*. *Style* 1. *Stigma* often lobed. *Fruit* hard, dry, and somewhat drupaceous, 1-seeded. *Albumen* fleshy, with the *embryo* in its axis. — Trees, shrubs, or herbaceous plants. Leaves *alternate* or *nearly so*, without *stipules*. Flowers *small*. — The true *Sandal-wood* of commerce is *Santalum album*; that of the Sandwich Islands, *Santalum Freycinetianum*. As in the preceding nearly allied Order of THYMELACEÆ, the bark is remarkably tough.

1. *Thesium* Linn. Bastard-Toadflax.

*Perianth* 4—5-cleft, persistent. *Stamens* with a small fascicle of hairs at their base. *Stigma* simple. *Drupe* crowned with the persistent perianth.—Name: *Θησεΐα* were the games instituted in honour of *Theseus*, and a plant, used to form the crown then competed for, obtained the name *Θησεΐον*,—but from Pliny's description it was very different from ours.

1. *T. linophyllum* L. (*Lint-leaved B.*); stems procumbent or ascending, leaves linear-lanceolate 1-nerved, racemes simple or paniced leafy, peduncles and pedicels with 3 bracteas, pedicels usually as long as the flower in fruit spreading, their angles and the edges of the bracteas and upper leaves denticulate-scabrous, fruit oval-oblong. *E. B. t.* 247. *T. humifusum* D C.

Elevated chalky pastures, Cambridgeshire, Norfolk, Suffolk, and Dorsetshire. Ranmar hills, near Dorking, Surrey. *Æ.* 5—7. — A true parasite. *Roots* woody, sending forth several herbaceous, spreading, leafy stems, terminated by the somewhat paniced leafy racemes. *Segments* of the *perianth* white. *Fruit* strongly ribbed, slightly reticulated.

2. *T. \*humile* Vahl (*erect B.*); stems erect branched from the base, leaves linear 1-nerved fleshy, racemes spicate, flowers sessile tribracteate.

Near Dawlish, Devonshire; *Mr. C. C. Babington*. *Æ.* 7, 8. — We have seen no British specimens of this species: Vahl's plant was obtained from the north of Africa, and it is most unlikely to be indigenous to England. *Fruit*, according to the descriptions given, similar to the last, but more reticulated.

## ORD. LXXV. ARISTOLOCHIACEÆ Juss.

*Perianth* below adnate with the ovary, above free, campanulate or tubular, with an usually irregularly lobed and often dilated limb. *Stamens* 6—10 or 12, epigynous. *Ovary* 3—6-celled: *ovules* numerous. *Style* simple. *Stigma* rayed. *Fruit* 3—6-celled, many-seeded. *Albumen* fleshy, with the minute *embryo* at its base. — Herbs or shrubs, often climbing. Leaves *alternate*. Wood without concentric zones. — Active emmenagogues.

1. ARISTOLOCHIA. *Perianth* tubular, very oblique: anthers 6, sessile on the style.
2. ASARUM. *Perianth* campanulate, equal, 3-cleft. *Stamens* 12.

## 1. ARISTOLÓCHIA Linn. Birthwort.

*Perianth* tubular, often swelling at the base, the mouth dilated on one side. *Anthers* 6, sessile on the short style. *Stigma* with 6 lobes. *Capsule* 6-celled. — Name originating in its supposed medicinal virtues.

1. A. \**Clematitis* L. (common B.); root creeping, stem erect simple, leaves heart-shaped stalked glabrous, flowers aggregated upright, lip oblong shortly acuminate. *E. B. t.* 398.

Naturalized among old ruins in the E. and S. of England. 4. 6—9. — *Flowers* pale yellow, swollen at the base; the swollen part covered on the inside with stiff hairs pointing downwards. When the flower is expanded, it is not uncommon for a little insect (*Tipula pennicornis*) to enter it, the stiff hairs preventing its egress until it has brushed off the pollen from the anthers upon the stigma: the perianth then withers, the hairs become flaccid, and the insect makes its escape.

## 2. A'SARUM Linn. Asarabacca.

*Perianth* campanulate, 3-cleft. *Stam.* 12, from the top of the germen. *Stigma* with 6 lobes. *Caps.* 6-celled. — Named from *a*, not, and *rupa*, a band; because it was rejected from the garlands of flowers employed by the ancients.

1. A. \**Europæum* L. (*Asarabacca*); leaves binate reniform obtuse. *E. B. t.* 1083.

Woods in the north. Lancashire, Westmoreland, and near Halifax. Near Linlithgow. 4. 5. — *Stem* very short. *Leaves* 2, petiolate, shining: from the axil of these 2 leaves springs a solitary, rather large, drooping flower borne upon a short foot-stalk, of a greenish-brown colour and coriaceous substance. *Segments* of the perianth incurved. *Filaments* produced beyond the cells of the anthers, as in the genus *Paris*. *Roots* aromatic, and said to be purgative and emetic.

II. *Flowers generally separated, monœcious or diœcious.*  
(ORD. LXXVI.—LXXXVII.)

\* *Flowers scattered or tufted. Ovary superior.*  
(ORD. LXXVI.—LXXXI.)

ORD. LXXVI. EMPETRACEÆ Nutt.

Diœcious. *Perianth* of 4—6 hypogynous persistent scales in two rows, (often surrounded by several imbricated similar bracteas); scales of the inner row (*petals*?) alternating with those of the outer, rarely united into one piece. *Stamens* 2—3, opposite to the scales of the outer row. *Filaments* elongated, protruded, persistent. *Anthers* 2-celled, opening longitudinally. *Ovary* free, on a fleshy disk, 2—9-celled: *ovules* solitary, erect or ascending from near the base of the cell. *Style* 1, short. *Stigma* rayed, with as many or twice as many divisions as there are cells; each division usually incised, rarely subulate and entire. *Fruit* fleshy, with 2—9 bony *nucules*. *Seeds* solitary, ascending. *Embryo* slender, in the axis of fleshy watery *albumen*. *Radicle* inferior. — *Small shrubs, with heath-like leaves, without stipules, and with small flowers*: — of dubious affinity.

1. *EMPETRUM* Linn. Crow-berry.

*Barren fl.* *Perianth* of 6 scales (with external imbricating similar bracteas), of which the 3 inner are spreading, and petaloid. *Stam.* 3. *Rudiment* of a *pistil*, with a many-cleft stigma. — *Fertile fl.* *Perianth* as in the barren. *Germs* globose. *Style* short. *Stigma* dilated, peltate, 6—9-rayed; rays lacinated. *Fruit* globose, with 6—9 seeds. — Named from *ερ, in*, and *πετρος, a stone*; growing in stony places.

1. *E. nigrum* L. (*black C.*, or *Crake-berry*); procumbent, leaves linear-oblong, stigma with 9 rays. *E. B. t.* 526.

Mountainous heaths in the North, abundant. 2. 4—6 — A small, procumbent, much-branching shrub, whose leaves have their margins so recurved as nearly to meet behind, leaving only a white central line. *Flowers* axillary towards the summit of the branches, small, purplish. *Berries*, or rather *drupes*, black, clustered, affording abundant food to the moor-game.

ORD. LXXVII. EUPHORBIACEÆ Juss.

*Anthers and pistils* in distinct flowers. *Perianth* free, 3-4 (or

more) cleft, or wanting. — *Barren flowers.* Stamens 1 or many. *Anthers* 2-celled. — *Fertile flowers.* Ovary 1, 2—3-celled. *Ovules* solitary or in pairs, pendulous. *Styles* 2—3. *Stigmas* 2—3, 2-lobed or compound. *Capsule* of 2—3, 1- or 2-seeded united *carpels*, usually bursting and separating with elasticity from the common axis, sometimes indehiscent or nearly so. *Seeds* suspended. *Embryo* in the axis of a fleshy *albumen*; *cotyledons* large, flat; *radicle* superior. — Stems *herbaceous* or *woody*. Leaves *alternate*, *opposite*, or *whorled*, or *alternate*, sometimes *none*. — Acrid, often milky vegetables, yielding food and poison, medicine, dye, and caoutchouc or India-rubber. The embryo is powerfully acrid and dangerous, the albumen innocuous and even eatable. *Castor oil* is extracted from the seed of *Ricinus communis*: *Cascarilla* of Europe is *Croton Eleuteria*: *Oil of Tiglium* is from *Croton Tiglium*, a drastic purgative: *Turnsol*, a valuable dye and a highly acrid and drastic plant, is *Crozophora tinctoria*. *Janipha Munihot*, a most poisonous plant, affords the esculent *Cassava*. The *Caoutchouc* of Guiana is the inspissated juice of *Siphonia elastica*. *Euphorbia officinarum*, *Antiquorum* and *Canariensis* give the *Euphorbium* of the shops. — The above character of the Order applies to the British genera, but not to many foreign ones, which would require it to be much more extended, some having scales or petals within the perianth.

1. MERCURIALIS. Barren and fertile flowers separate. Perianth 3-partite. Stam. 9—12. Styles 2, simple. Caps. 2-celled, 2-seeded, loculicidal.
2. EUPHORBIA. Stamens (12 or more) and 1 pistil collected within a campanulate involucre. Styles 3, bifid. Capsule 3-celled, 3-seeded, thin and crustaceous, septicidal.
3. BUXUS. Flowers aggregated, barren ones usually with a fertile central one. Perianth 4-partite, with 1—3 bracteas at the base. Stam 4. Styles 3. Caps. 3-celled, 6-seeded, coriaceous, 3-beaked.

### 1. MERCURIÁLIS Linn. Mercury.

Dioecious or monœcious. — *Barren fl.* Perianth single, tripartite. Stam. 9—12, without any rudiment of an ovary *anthers* of 2 globose lobes. — *Fertile fl.* Perianth single, tripartite. Filaments 2—3, without *anthers*. Styles 2, simple. Caps. 2-celled; cells 1-seeded, bursting at the back. — So named, because the god *Mercury* is said to have discovered the virtues, of what kind soever they may be, of this plant.

1. *M. perennis* L. (*perennial* or *Dog's M.*); dioecious, fertile flowers in stalked lax spikes, stem perfectly simple, leaves rough, root creeping, perennial. *E. B.* t. 1872.

Woods and shady places, abundant. 4. 3—5. About 1 foot high. Leaves mostly on the upper part of the stem, ovate, serrated

Both kinds of flowers are in axillary, lax spikes. The plant when drying often becomes of a bluish or blackish green. — *M. ovata* Steud. et Hoppe has been found in hedge-rows near Hurstpierpoint, Sussex; but "it is probably only a state of *M. perennis*" Mitten in Lond. J. B. vii, p. 531.

2. *M. annua* L. (*annual M.*); fertile flowers whorled nearly sessile, stem with opposite branches, leaves glabrous, root fibrous annual. —  $\alpha$ . dioecious, leaves ovate or ovate-oblong, fertile flowers in lax spikes. *E. B. t.* 559. —  $\beta$ . monœcious, leaves lanceolate, sterile and fertile flowers whorled intermixed. *M. ambigua* L. *fil.*: *Bab. in E. B. S. t.* 2816.

Waste places about towns and villages, not common.  $\beta$ . Jersey. Isle of Wight. ☉. 7—11. — Stem about 1 foot high. *Var. β*. has certainly a very different appearance, but De Candolle and most authors do not consider it distinct.

## 2. EUPHORBIA Linn. Spurge.

*Involucre* of one piece, resembling a perianth, including one fertile and several barren flowers, 5-cleft, with 4—5 glands alternating with the segments. — *Barren fl.* A single stamen without a perianth. — *Fertile fl.* A single pistil without a perianth (or rarely a very minute one). *Ovary* 3-lobed, 3-celled, 3-ovuled. *Styles* 3-cleft. *Caps.* separating elastically from the axis into 3 cocci, each bursting along the inner angle towards the apex and 1-seeded. — Named from *Euphorbus*, physician to Juba, king of Mauritania, who brought the plant into use.

\* *Leaves with stipules. Glands of the involucre with small membranaceous processes beneath.*

1. *E. Péplis* L. (*purple S.*); stem procumbent forked, leaves oblong heart-shaped nearly entire, flowers axillary solitary, glands of the involucre rounded on the outside; capsule smooth keeled, seeds smooth (white). *E. B. t.* 2002.

Sandy coast, in Devon and Cornwall. Channel Islands. ☉. 7—9. — Remarkable for its procumbent stems, of a glaucous hue much tinged with purple, and stipuled leaves.

\*\* *Leaves without stipules. Glands of the involucre without membranaceous processes beneath.*

† *Glands of the involucre roundish or transversely oval.*

2. *E. helioscopia* L. (*Sun S.*); umbel of 5 principal 3-fid and bifid branches, bracteas and leaves membranaceous obovate-cuneate serrated upwards, capsule glabrous, seeds reticulated and pitted. *E. B. t.* 883.

Abundant in waste and cultivated ground. ☉. 6—10. — The acrid milky juice is employed to destroy warts.

3. *E. platyphýlla* L. (*broad-leaved warted S.*); umbel of about 5 principal 3-fid and bifid branches, bractæas cordate, leaves membranaceous broadly obovate-lanceolate acute finely serrulate, glands of the involucre (yellow) oval, capsule warted, seeds smooth (brownish). *Jacq. Ic. Rar. t. 376. E. stricta L. and E. Bot. t. 333* (starved specimens).

Corn-fields; Albourne and near Henfield, Sussex (exactly corresponding with Jacquin's plant); Isle of Wight (frequent); Tunbridge Wells, and elsewhere in Kent; Essex, Cambridgeshire, Suffolk, and probably other counties. ☉. 6—10. — *Leaves and capsules* glabrous or hairy. *Seeds*, in a variety or species called *E. pubescens*, rough with minute points. — A plant agreeing with Reichenbach's figure of *E. "stricta,"* and differing, by the leaves narrowed above the base instead of narrowed gradually to the base, from the common form of *E. platyphýlla*, occurs between Tintern and the Wind-cliff.

4. *E. Hiberna* L. (*Irish S.*); umbel of about 5 principal branches, bractæas and leaves ovate or elliptical entire, glands of the involucre 4 (purple) kidney-shaped with intermediate rounded lobes, capsule warted glabrous, seeds smooth. *E. B. t. 1337.*

In hedges and thickets, in the south of Ireland. Between Fever-sham and Sittingbourne, Kent. Isle of Wight; East Lynn river, near Brendon, N. Devon; and at Lynmouth. ♀. 5—6. — *Stem* 1½—2 feet high.<sup>1</sup>

5. *E. palústris* L. (*Marsh S.*); "umbel irregular about 5-cleft, then 3-fid and bifid, bractæas all elliptical glabrous entire, leaves broadly lanceolate minutely serrate slightly hairy, glands of the involucre 4 transversely oval, capsules warted hairy, seeds obovate minutely punctate smooth." *Bab.: Forst. in Linn. Trans. xvii. p. 536: E. pilosa L.: E. B. S. t. 2787.*

Shady places. Prior Park Lane, near Bath: *Lobel* before 1576, and *Johnson* in 1634. ♀. 5, 6. — We follow Mr. Babington in the character of this and the following species, and Mr. E. Forster for the name here adopted. The species chiefly known under this name on the Continent has glabrous capsules, and is perhaps not sufficiently distinct from *E. Hiberna*.

6. *E. \*corallóides* L. (*Coral-like hairy S.*); "umbel 5-fid, then 3-fid and 2-fid, bractæas ovate-oblong the tertiary ones ovate, all hairy, leaves lanceolate minutely serrate woolly, glands of the involucre transversely oval, capsules nearly smooth woolly, seeds obovate minutely punctate and with faint reticulate bands." *Bab.: E. B. S. t. 2837.*

Slinfold, Sussex, in hedges; supposed to have been introduced. ♂? 5, 6. — "Distinguished from *E. palústris* most remarkably by

<sup>1</sup> According to the late Dr. Taylor, this plant is extensively used by the peasantry of Kerry for poisoning, or rather stupefying, fish, in the same manner as the *oxalis* *E. piscicaria*. So powerful are its qualities, that a small creel or basket filled with the bruised plant, suffices to poison the fish for several miles down a river.

its habit; and although its specific characters are less easily observed, yet, in my opinion, they are fully sufficient, permanent, and apparent, to separate it from its allies." *Bab.* in *E. Bot.* Both appear to be included under *E. pilosa* by M. Roeper, who alone has taken a clear and comprehensive view of the variations to which the European species of the genus are subject.

†† Glands of the involucre triangular, or lunate on the outside, or 2-horned.

‡ Bracteas distinct at the base.

7. *E. \*E'sula* L. (*leafy-branched S.*); umbel of many principal branches and several scattered peduncles below, bracteas cordate, leaves membranaceous linear- or oblong-lanceolate mostly entire, glands of the involucre roundish with two horns, germens glabrous minutely granulated, seeds obovate smooth. *E. B.* t. 1399.

Woods near Edinb, and at Slinfold, Sussex. Banks of Tweed near Coldstream. 4. 7.

8. *E. \*Cyparissias* L. (*Cypress S.*); umbel of many principal branches and several scattered peduncles below, bracteas cordate, leaves linear entire membranaceous glabrous, glands of the involucre lunate, germens minutely granulated, seeds obovate smooth. *E. B.* t. 840.

Woods. Staffordshire, Bedfordshire, Northumberland. 4. 6, 7.  
— Readily distinguished by its narrow linear leaves.

9. *E. Paralias* L. (*Sea S.*); umbel of about 5 principal bifid branches often with inferior scattered ones, bracteas somewhat reniform-cordate concave, leaves coriaceous obovate- and linear-lanceolate (generally) imbricated glaucous entire concave, glands of the involucre (5) lunate with short points, capsules wrinkled, seeds smooth. *E. B.* t. 195.

Sandy sea-coast of England, and near Dublin, but not general. 4. 8—11. — Stems numerous from the same root, woody below. Leaves very closely imbricated, especially on the young shoots.

10. *E. Portlandica* L. (*Portland S.*); umbel with about 5 principal dichotomous branches and several inferior scattered ones, bracteas triangular-cordate, leaves membranaceous obovate-lanceolate generally obtuse and submucronate, glands of the involucre (4) lunate with two long points, capsule rough at the angles, seeds dotted (almost white). *E. B.* t. 441.

Sandy sea-coast, in the extreme south and west of England; Wales; Isle of Man. South of Scotland. Dublin. 4. 5—9. — Stem 6—10 inches high. This appears to be very rare on the Continent, unless known under some other name.

11. *E. Péplus* L. (*petty S.*); umbel of about 3 principal branches, bracteas ovate, leaves membranaceous broadly obovate on short stalks entire glabrous, glands of the involucre

lunate the horns very long, germen somewhat winged and scabrous, seeds dotted. *E. B.* t. 959.

Cultivated and waste ground, abundant. ☉. 7—11.

12. *E. exigua* L. (*dwarf S.*); umbel of generally 3 principal forked branches, leaves linear-lanceolate as well as the bracteas rather rigid entire glabrous often truncate and mucronate, glands of the involucre roundish with two horns, capsules nearly smooth slightly tuberculate on the angles, seeds angular wrinkled or reticulated. *E. B.* t. 1336.

Corn-fields, in a light soil, frequent. ☉. 7—10. — *Stem* 4—6 inches high, branched at the base. *Seeds* small, white, nearly 4-angled.

13. *E. \*Láthyris* L. (*Caper S.*); umbel of 3—4 principal bifid branches, bracteas cordate-acuminate, leaves submembranaceous entire 4-farious on the first year's stem, oblong-lanceolate and cordate at the base on the second year's shoot, glands of the involucre bluntly lunate, germen glabrous, seeds rough. *E. B.* t. 2255.

Thickets and underwoods. Upton, near Reading; East Marden, Essex; Arundel, Sussex; Steep Holmes in the Severn. Crawfordland, near Kilmarnock; Comrie Den, near Dunfermline; &c. ♂. 6, 7.

‡‡ *Bracteas united at the base, as if one perfoliate leaf.*

14. *E. amygdaloides* L. (*Wood S.*); umbel of about 5 or 6 principal branches and several scattered peduncles below, leaves nearly membranaceous obovate-lanceolate hairy beneath attenuated at the base entire, glands of the involucre (yellow) lupate with 2 horns, capsules minutely tuberculate glabrous, seeds smooth. *E. B.* t. 256. *E. sylvatica* L.

Woods and thickets in England, especially in a clayey soil. South of Ireland. 4. 4, 5. — *Stems* red, almost shrubby.

15. *E. \*Charácias* L. (*red shrubby S.*); umbel of many principal downy branches with several peduncles below, bracteas broad acute, leaves lanceolate, glands of the involucre (purple) bluntly lunate, germens minutely tuberculate glabrous, seeds smooth. *E. B.* t. 442.

In Needwood Forest, Staffordshire. ♀. 3, 4. — A large and handsome species, not uncommon in gardens, whence it has been an outcast.

### 3. *Búxus* Linn. Box.

*Flowers* monœcious, aggregated, axillary. — *Barren fl. Perianth* of 4 leaves (2 inner opposite ones smaller) with one *bractea* at the base. *Stam.* 4, inserted under the rudiment of an *ovary*. — *Fertile fl. Perianth* as in the *barren fl.*, with 3 *bracteas* at the base. *Styles* 3. *Caps.* with 3 beaks, 3-celled; cells



2-seeded. — Name altered from *ρυτός*; the Greek name for this tree.

1. *B. sempervirens* L. (*common B.*); leaves oval oblong retuse convex coriaceous shining, their stalks slightly hairy, anthers ovate-sagittate. *E. B. t.* 1841

Dry chalky hills, principally in the south of England. *h.* 4—6. — A small tree, when suffered to attain its natural stature. A dwarf *var.* is extensively employed as edgings in gardens. The wood is of great value for turning, carving, and engraving upon.

### ORD. LXXVIII. CALLITRICHACEÆ *Lindl.*

*Flowers* axillary, solitary, very minute, imperfect, monœcious, with 2 fistular white *bracteas* (sometimes wanting in the fertile fl.) at the base. *Perianth* 0. — *Barren fl.* *Stamen* 1 or rarely 2; *filament* filiform, furrowed along the middle; *anther* reniform, 1-celled, opening transversely by 2 valves at the summit. — *Fertile fl.* *Ovary* solitary, 4-angled, 4-celled, with a solitary *ovule* in each cell suspended from the axis a little above the middle. *Styles* 2, subulate. *Stigmas* punctiform. *Fruit* 4-celled, 4-lobed; the lobes 1-seeded, indehiscent, laterally compressed, cohering at the axis, otherwise free. *Seeds* attached by the middle. *Embryo* in the axis of fleshy *albumen*; *radicle* superior long; *cotyledons* short, semiterete. — *Small aquatic herbaceous plants, with opposite, simple, entire leaves.*

#### 1. CALLITRICHE *Linn.* Water Starwort.

*Char.* that of the Order. — Name: *καλος*, *beautiful*, and *σπῆξ*, *τριχος*, *hair*; its stems being long and slender, and resembling hairs.

1. *C. verna* L. (*vernal W.*); fructiferous peduncles very short with 2 falcate bracteas at their base, fruit regularly tetragonal, each lobe keeled or slightly winged at the back. — *α.* lobes of the fruit bluntly keeled. *C. aquatica* *E. B. t.* 722. — *β.* lobes of the fruit slightly winged at the back. *C. platycarpa* *Kutz.* : *E. B. S. t.* 2864.

Ditches, pools, and slow streams, abundant. ☉. 4—9. — This varies much, as do almost all aquatic plants, in its foliage. Upper and floating leaves generally oval and stalked, 2-ribbed; lower ones single-ribbed, linear; rarely all linear. Our *var. α.* is said to have the styles constantly erect, *var. β.* to have them reflexed when in fruit; but in the former we find them to be usually as much reflexed as in the other.

2. *C. pedunculata* DC. (*pedunculated W.*); fructiferous peduncles without bracteas at the base, fruit regularly tetragonal,

each lobe bluntly keeled at the back. *C. autumnalis* Hook. in *E. B. S.* t. 2606 (*excl. the syn.*).

Ditches in Jersey, Sussex, Shropshire, Wales, &c. ☉. 6—9. — *Fruit* sometimes almost sessile.

3. *C. autumnalis* L. (*autumnal W.*); fructiferous peduncles very short without bracteas at the base, fruit irregularly tetragonal, each lobe broadly and acutely winged at the back. *E. B. S.* t. 2732. *C. aquatica* γ. *E. B. t.* 722 (*the small figure*).

Ditches and lakes. Near London. Anglesea. Loch of Cluny, Perthshire; Lochs near Forfar; Loch of Drum, Kincardineshire; Scotland. ☉. 6—10.

# ORD. LXXIX. CERATOPHYLLACEÆ Gray.

*Flowers* imperfect, monœcious. *Perianth* (involucre ?) single, free, 10—12-cleft. — *Barren fl.* *Anthers* 12—20, sessile, 2-celled, 2—3-cuspidate. — *Fertile fl.* *Ovary* superior, solitary, bicuspidate above the base, 1-celled, with one pendulous ovule. *Style* oblique, filiform, at length hardened, persistent. *Stigma* simple. *Fruit* an achene, 1-seeded. *Albumen* 0. *Embryo* straight; with 2 cotyledons and a many-leaved plumule; radicle inferior. — An aquatic Order comprising one genus, of doubtful affinity. Leaves whorled, rigid, dichotomous, with narrow serrated segments.

## 1. CERATOPHYLLUM Linn. Hornwort.

Character same as of the Order.—Name: *κερας*, *κερατος*, a horn, and *φυλλον*, a leaf, from the forked leaves.

1. *C. demersum* L. (*common H.*); fruit armed with 2 spines or tubercles near the base and terminated by the longish subulate style. — α. spines of the fruit rigid long terete. *E. B.* t. 947. *C. oxyacanthum* Cham. — β. spines of the fruit long rigid laterally compressed and winged at the base. *C. platycanthum* Cham. — γ. two tubercles at the base of the fruit and no spines. *C. submersum* DC. *C. apiculatum* Cham.

Frequent in slow streams and ditches. 4. 7. — Floating. *Stem* long, slender. *Leaves* setaceous, whorled, 2 or 3 times forked, distantly serrated. *Flowers* small, whorled in the axils of the leaves. *Spines of the fruit* sometimes very obscure. The foliage of this plant is often inflated and jointed, so as to look like a *Conserva*. Smith remarks that he observed the segments of the perianth to be always emarginate or bifid in this species, and entire in *C. submersum*; but it would appear from Lindley's *Veget. Kingd.* p. 263. fig. 178., that no dependence can be placed on this. Our var. α. is the most common in this country; β. is the most common in Germany, and may have

been passed over with us as the same as  $\alpha$ . The var.  $\gamma$ . forms a link between this and the next, and would seem from Mr. Babington's notice of it to be a native.

2. *C. submersum* L. (*unarmed H.*); fruit without spines or tubercles and terminated by the very short style. *E. B.* t. 679. *C. muticum* Cham.

Ditches in the east and south of England, rare. 4. 6, 7. — Only to be distinguished from the preceding by the very short persistent style (much shorter than the fruit), and the total absence of either spines or tubercles.

### ORD. LXXX. URTICACEÆ Juss.

*Flowers* generally monœcious or diœcious (very rarely some of them perfect), scattered, or amentaceous, or aggregated on a fleshy persistent receptacle. *Perianth* divided, persistent or wanting. *Stamens* definite, distinct, opposite the lobes of the perianth and inserted at its base when there is one. *Ovary* free, 1-celled. *Ovule* solitary. *Fruit* usually an *achenium*, often several combined and immersed in the persistent fleshy perianths or upon or within large fleshy receptacles. *Embryo* with the *radicle* superior. — Trees, shrubs, or herbs, with stipules, often stinging and sometimes milky. — This has been divided into four Orders or Sub-orders. I. URTICEÆ, containing the *Nettles*, &c., the fibre of the inner bark of some of which is very tenacious. II. CANNABINEÆ, yielding *Hemp* from the genus *Cannabis*, and a narcotic bitter from the same and also from the *Hop*. III. MOREÆ (known by the flowers in heads, spikes, or catkins, large stipules, hooked embryo and fleshy albumen); to which belong *Morus alba*, producing the *Mulberry*; *M. tinctoria*, the dye called *Fustic*; *Broussonetia* or the *Paper Mulberry*; *Ficus Carica*, yielding the luscious *Fig*; *Urostigma elasticum*, one of the plants that produce *Caoutchouc* or *India-rubber*; *Dorstenia*, a species of which is the *Contrayerva*. IV. ARTOCARPEÆ (having the flowers in dense heads, spikes, or catkins, large stipules, and a straight embryo without or with very thin albumen) to which are referred the famous *Bread-fruit*, or *Artocarpus incisa*, and the *Jak-* (or *Jack-*) *fruit*, *A. integrifolia*; *Antiaris toxicaria*, the celebrated *Poison-tree*, or *Upas*, of Java; and the *Galactodendron utile* Humb., or *Cow-tree*, of South America, from which flows a milk which is esteemed a most nutritive beverage by the natives.

1. URTICA. Stamens 4. Perianth of fertile flowers 2-separated. Stigma 1. sessile, penicillate.
2. PARIETARIA. Stamens 4. Perianth of fertile flowers 4-cleft. Style 1, conspicuous. Stigma 1, penicillate.

3. HUMULUS. Stam. 5. Perianth of fertile flowers a mere scale. Stigmas 2, sessile, filiform.

SUB-ORD. I. URTICÆÆ. *Flowers usually separate from each other. Filaments curved inwards during æstivation, then bending outwards. Anthers inverted in æstivation. Style and stigma 1. Ovule erect Embryo straight, in the axis of fleshy (but often thin) albumen. Stipules small.*

1. URTICA Linn. Nettle.

Monœcious or diœcious. — *Barren fl.* Perianth of 4 leaves, containing the rudiment of a pistil. *Stam. 4.* — *Fertile fl.* Perianth of 2 leaves, with sometimes 2 external smaller ones or bracteas. *Stigma 1*, sessile, penicillate. *Fruit* an achene. — Leaves *opposite*. — Named from *uro*, to burn; in allusion to its stinging property.

1. *U. pilulifera* L. (*Roman N.*); leaves ovate or cordate acuminate with transverse nerves, spikes in pairs, fertile ones dense globular, achenes minutely granulate shining, root annual. —  $\alpha$ . leaves usually coarsely toothed. *E. B. t.* 143. —  $\beta$ . leaves nearly entire. *U. Dodartii* L. *U. integrifolia* Lam.

Under walls and among rubbish, about towns and villages in England, principally near the sea, but nowhere well established. Ballylickey, south of Ireland. —  $\beta$ . Copford, Essex; Upwell, Norfolk; Wisbeach, Cambridgeshire. ☉. 6—8. — The most venomous of our British nettles. Mr. Babington makes our two varieties distinct species, and attributes to the first "stipules oblong-ovate, seeds tubercled," and to the second, "stipules lanceolate, seeds smooth;" but in our cultivated specimens of the latter, both are precisely as in the former. *U. Dodartii* is only known as a cultivated plant, and therefore may be looked upon as a very suspicious native, although the above localities have been given for it.

2. *U. úrens* L. (*small N.*); leaves elliptical serrate with about 5 nearly parallel ribs, spikes in pairs oblong nearly simple shorter than the petiole, achenes obscurely granulate opaque, root annual. *E. B. t.* 1236.

Waste places and cultivated ground, frequent. ☉. 6—9.

3. *U. dioica* L. (*great N.*); leaves ovate acuminate or ovate lanceolate serrate cordate or rounded at the base, spikes in pairs mostly diœcious much branched longer than the petiole, root perennial. *E. B. t.* 1750.

Waste places under walls and hedge-banks, frequent. ☉. 6—9. — When the leaves are broad they are cordate, when narrow, rounded at the base; but transitions may be observed on the same specimen. *Filaments* transversely wrinkled and elastic as in *Parietaria*. *Fertile perianth* often with 2 small bracteas at the base. The root, boiled with alum, dyes yarn yellow; from the fibres of the stalk a kind of

hemp is manufactured, as with the *U. cannabina* of N. America. In Scotland the young tops are in spring boiled and made into soup or *kail* by the common people, which is viewed in the light of a cooling medicine.

## 2. *PARIETÁRIA* Linn. Pellitory of the Wall.

Polygamous *Perianth* 4-fid. *Stam.* 4, wanting in some flowers; *filaments* transversely wrinkled, at first incurved, then bending back with elastic force. *Style* filiform. *Stigma* penicillate. *Achene* shining, enclosed by the *perianth*. — Leaves *alternate*. — Named from *paries*, a wall; the species frequently growing on old walls.

1. *P. officinális* L. (*common P.*); leaves oblong-oval or ovate-lanceolate attenuated at both ends 3-nerved above the base, involucre of two 3—7-lobed segments with an alternating bractea 3—7-flowered, flowers sessile, that between the segments with a pistil only, one only on each segment perfect at length enlarged tubular coloured and longer than the stamens, the others (when present) barren always short and campanulate. — *α*. involucre mostly 3-flowered, stems ascending or diffuse. *E. B.* t. 879. *P. ramiflora* *Mench.* *P. diffusa* *Koch.* — *β*. involucre mostly 7-flowered, stem usually erect. *P. officinális* *Spr.* *P. erecta* *Koch.*

Old walls and waste places among rubbish. — *β*. more rare. Essex and Pembroke. North Wales. Stirling and Linlithgow. 4. 6—9. — *Stems* reddish, pubescent. *Flowers* hairy, clustered in the axils of the leaves. The structure of these clusters, as explained by other species, appears to be this: every cluster is a minute contracted dichotomous cyme with a definite or centrifugal inflorescence: the central (primary) flower, which has no stamens, is provided with two lateral bracteas; between which and the flower appears a perfect (secondary) flower, having also two bracteas at its base, which uniting with the first bracteas form each of the three-lobed segments of the involucre: in luxuriant specimens every secondary flower is accompanied by two sterile (tertiary) flowers with an imperfect pistillum, furnished also with two bracteas, which also uniting with the preceding bracteas form two segments, of 7 lobes a-piece. The involucre then consists of twice as many bracteas as there are flowers, these bracteas being united into two pieces or leaves, consisting of as many lobes as there are flowers. Alternating with the pieces of the involucre is an additional smaller external bractea on one and sometimes on both sides. Occasionally in *var. α.*, especially near the summit of the stem, the secondary flowers are sterile: in *β*. this also occurs, the tertiary flowers disappearing; more rarely the secondary flowers disappear, leaving only the primary and four tertiary ones, and then every piece of the involucre is 5-lobed. What Linnæus called *P. Judaica*, from Palestine, may be a state (perhaps a monstrosity) of our *var. α.*, with the perfect flowers longer and narrower, somewhat resembling a horn;

but what is so termed in Switzerland (Hall. n. 1619) is precisely our common form.

SUB-ORD. II. CANNABINÆ. *Diacious. Barren fl. racemose or paniced. Filaments of stamens straight and anthers erect during æstivation. Stigmas 2, sessile, filiform. Ovule pendulous. Embryo hooked or spiral, without albumen. Stipules small.*

### 3. HÚMULUS Linn. Hop.

*Barren fl. Perianth 5-partite. Stam. 5. Anthers with 2 pores at the extremity. — Fertile fl. in a catkin, the scales (perianth ?) concave, entire, single-flowered, at first enveloping the ovary, at length persistent and enlarged. Perianth 0, except the scale. Embryo spiral. — Name: humus, rich soil, or mould; in which the plant flourishes.*

1. H. \* *Lúpulus* L. (*common H.*). *E. B. t. 427.*

Thickets and hedges in various places. 4. 7, 8. — *Stems long, weak and twining, scabrous. Leaves petiolate, opposite 3—5-lobed, serrate, veiny, rough. Flowers greenish-yellow. Dr. Bromfield thinks this "indisputably indigenous in the S. of England." The fragrant bitter, so valuable in the manufacture of beer, resides in the catkins, or cones as they are often called, of the Hop.*

### ORD. LXXXI. ULMACEÆ Mirb.

*Flowers perfect or polygamous, not in catkins. Perianth membranous, inferior, campanulate and 3—8-cleft, or 5-partite; segments imbricated in æstivation. Stamens definite, inserted into the base of the perianth, as many as and opposite to its segments. Anthers 2-celled, erect in æstivation. Ovary free, 1—2-celled. Ovules solitary in each cell, pendulous or suspended. Stigmas 2, distinct, elongated. Fruit 1-celled, 1-seeded, indehiscent, dry, or drupaceous. Seed pendulous, without or with little (fleshy) albumen. — Trees or shrubs, with scabrous, alternate, distichous, stipuled leaves; allied to Rhamnaceæ, according to Lindley; but if Celtideæ be combined with them, they are scarcely distinguishable from Urticaceæ, of which they are probably only a Suborder.*

#### 1. U'LMUS Linn. Elm.

*Flowers perfect. Perianth persistent, with 3—8 divisions, campanulate or conical at the base. Stam. 5. Filaments straight in æstivation, not bending back elastically. Ovary 2-celled. Capsule compressed, winged all round (hence a Samara). —*

Named, according to Théis, from the Anglo-Saxon *Elm*; and *Olm* is still the Dutch, and *Ulm* the German word for this tree; but all these are derived from the Hebrew *ul*, to be *strong* or *vigorous*, from the growth of the tree and quality of the timber.

(The English species belong to the subgenus *Dryoptelea* Spach; *Pericarp* subcylathiform-campanulate, equal, 4—6-cleft. *Samara* naked at the margin. *Pedicels* short, densely fascicled. *Leaves* serrated. *Flowers* before the leaves. — As in *Rubus* and *Salix*, the numerous supposed species of this genus require to be much reduced; we shall follow Planchon in the Ann. Sc. Nat. Ser. 3. x. p. 272. and Phytol. iii. p. 34.)

1. *U. \*suberosa* Ehrh. (*common E.*); leaves shortly acuminate doubly or somewhat simply serrated, flowers (small) 4-5-cleft, segments ciliated, samara broadest above the middle glabrous shortly bifid at the apex, the seminiferous cavity chiefly above the middle and extending almost to the notch. — *α. vulgaris*; leaves rhomboid-obovate small (1—3 inches long) scabrous above pubescent below. *U. campestris* Sm. (and *most authors*, not L.) *E. B. t.* 1886 (*samara cuneate-oblong*). *U. suberosa* Ehrh.: *E. B. t.* 2161 (*samara roundish-obovate*). — *β. major*; leaves larger (2½—5 inches long) scabrous above, pubescent below. *U. major* Sm.: *E. B. t.* 2542? — *γ. laevis*; leaves more or less coriaceous shining and smooth or slightly scabrous above, nearly glabrous beneath except in the axils of the nerves, younger ones stipules and samaræ with scattered stalked glands, branches pendulous. *U. glabra* Mill.: *E. B. t.* 2248. *U. carpinifolia* Lindl. — *δ. fastigiata*; as in the last, but the branches rigid erect and compact, and the leaves sometimes cuspidate. *U. stricta* Lindl.

Woods and hedges. — *α.* Throughout England. — *β.* in the neighbourhood of London. — *γ.* Chiefly in the S. of England and Ireland. — *δ.* Cornwall and North Devon. *h.* 3—5. — The first form of our *var. α.* which grows principally in Norfolk and Sussex, yields the best wood of all the Elms, and is consequently employed for a great variety of purposes, particularly for articles that must be exposed to moisture. It is said to have been brought to Europe from Palestine by the Crusaders. The other form, although the common Elm of England, was not believed to be indigenous so long ago as in the time of Miller. Perhaps two plants are known under the name of *U. major*: all those we have seen belong to the present species; but Smith's description of the fruit is more that of the next, while the figure in *E. Bot.* seems to be that of *U. suberosa*: it is generally considered not to be a native, as the old name *U. Hollandica* imports. The *var. γ.* is the *Wych* or *Witch-Elm*, and appears to be only a glabrous form of this species: some specimens called *U. glabra* belong however to the next. Of *U. stricta* of Lindley the fruit is unknown.

2. *U. campestris* L. (*broad leaved E. or Wych-hazel*); leaves doubly serrated cuspidate, usually scabrous above and pubescent

beneath sometimes nearly glabrous, flowers 5—7-cleft, segments ciliated, samara oblong or roundish broadish about or below the middle shortly bifid at the apex, the seminiferous cavity chiefly below the middle and distant from the notch. *U. montana* Bauh.: Sm.: *E. B.* t. 1887.

Woods and hedges, frequent, certainly wild. *h.* 3, 4. — This is certainly the *U. campestris* L. and of Swedish and Danish botanists, as Mr. Borrer long since suspected, and which Dr. Bromfield has proved by consulting the Linnæan herbarium: it is the only species wild in the north of Europe. Distinguished at first sight by its large spreading branches and broad leaves appearing just as the “hop-like fruit” comes to perfection, but with more certainty by the relative position of the cavity and notch of the fruit, a character first indicated by Gaudin, and which may even be observed in the ovary when a little advanced. A variety is called the weeping Elm. To this Lindley refers also the Giant Elm and Chichester Elm. The wood is of inferior quality. Smith remarks that it is similar in the foliage to the *U. ciliata* Ehrh. (*U. pedunculata* Foug.), and Wahlenberg has confounded it with that species, which is not found in England and has an obliquely lobed perianth and a ciliated samara, and is perhaps a variety of *U. Americana* Willd.

\*\* *Barren flowers in catkins.* (ORD. LXXXII.—LXXXVII.)

#### ORD. LXXXII. ELÆAGNACEÆ Juss.

Mostly dioecious. — *Barren fl.* somewhat amentaceous. *Perianth* 2—4-parted. *Stamens* 3 or more. *Anthers* 2-celled.

— *Fertile fl.* *Perianth* tubular, persistent, 2—4-toothed or cleft. *Ovary* 1, free, 1-celled, with one erect ovule. *Style* short. *Stigma* subulate, glandular. *Fruit* crustaceous, enclosed within the fleshy perianth. *Seed* solitary, erect. *Embryo* with a thin fleshy albumen; *radicle* inferior. — *Trees or shrubs, with frequently leprous scales and no stipules.*

##### 1. HIPPOPHÆE Linn. Sallow-thorn.

*Dioecious.* — *Barren fl.* collected into a small sort of catkin, each scale bearing a flower. *Perianth* single, of 2 deep, roundish valves. *Anthers* linear, nearly sessile. — *Fertile fl.* solitary. *Perianth* single tubular, cloven at the summit. — *Name:* in Greek *ἵπποφαη*, apparently a corruption of *ὑποφαη* from *ὑπο*, under, and *φαειν*, to shine, in reference to the shining scales on the under-sides of the leaves.

1. *H. rhamnoides* L. (common *S.* or *Sea-Buckthorn*). *E. B.* t. 425.

• Sand-hills and cliffs, upon the east and south-east coast of England. Kent; Essex; Norfolk; Lincoln; and Yorkshire. Aberlady on the Forth, and Toward-point on the Clyde; also in Islay and Kintyre, but scarcely indigenous in Scotland. *h.* 5—7.



## ORD. LXXXIII. MYRICACEÆ Rich.

Monœcious or diœcious, all amentaceous. *Perianth* 0.—*Barren fl.* *Stamens* 2—8. *Anthers* 2- or 4-celled, opening longitudinally.—*Fertile fl.* *Ovary* free, 1-celled, with 1 erect *ovule*, surrounded by hypogynous persistent scales. *Stigmas* 2. *Fruit* drupaceous, often covered with waxy secretion, and with the hypogynous scales becoming fleshy and adherent. *Seed* solitary, erect. *Embryo* without albumen. *Radicle* short, superior.—Shrubs or small trees, often aromatic, with resinous glands and alternate leaves.—In *Myrica cerifera* a copious wax exudes from the berries, employed for economical purposes.

## 1. MYRICA Linn. Gale.

Scales of the *catkins* concave.—*Barren fl.* *Stam.* 4 or 8.—*Fertile fl.* *Stigmas* subulate. Hypogynous scales sessile, without a gland on the inside.—Name: *μυρίκη*, in Greek synonymous with the *Tamarix*.

1. *M. Gale* L. (sweet *G.* or *Dutch-Myrtle*); leaves lanceolate broader upwards serrated, stem shrubby. *E. B. t.* 562.

Bogs and moory ground, most abundant, especially in Scotland. *h.* 5—7.—The plant diffuses an agreeable smell: its leaves have a bitter taste, whence they are sometimes employed instead of hops. In Islay and Jura the inhabitants scent their clothes with the foliage; and, in many parts of Scotland, beds are made of the twigs.

## ORD. LXXXIV. BETULACEÆ Rich.

Monœcious, all amentaceous.—*Barren fl.* Scales of the *catkin* peltate, 1—3-flowered, with 2—5 bracteoles. *Perianth* 4-partite or none. *Stam.* 4 and opposite the leaves of the perianth, or 8—12 with 2—3 scales at their base. *Filaments* very short, distinct. *Anthers* erect, 2- (or 1-?) celled.—*Fertile fl.* Scales of the *catkin* entire or 3-lobed, 2—3-flowered, enlarging with the fruit. *Perianth* none, or of 4 scales at the base of the ovary. *Ovary* free, 2-celled, with a solitary pendulous *ovule* in each cell. *Style* 0. *Stigmas* 2, filiform. *Fruit* compressed, dry and indehiscent, 1-celled, 1-seeded. *Seed* pendulous; *albumen* 0; *cotyledons* flat; *radicle* superior.—Trees or shrubs. Leaves alternate, simple, with the nerves often running straight from the midrib to the margin. Stipules deciduous.

1. BETULA. Perianth of barren fl. 0. Stam. 8—12. Achene winged.
2. ALNUS. Perianth of barren fl. 4-partite. Stam. 4. Achene not winged.

### 1. BÉTULA Linn. Birch.

*Barren fl.* Perianth 0. Stam. 8—12, with 2—3 small scales at the base (indicating 2—3 flowers, each of 4 stamens). — *Fertile fl.* Scale of the catkin 3-lobed, 3-flowered. Perianth 0. Fruit with a membranaceous margin. — Name: derived from *betu*, the Celtic name for the Birch (*beath* in Gaelic).

1. *B. álba* L. (*common B.*); leaves ovate-deltoid acute doubly serrated, fruit broadly obovate with a broad margin. *E. B.* t. 2198.

Woods, especially in heathy soils and in mountainous countries. *h.* 4, 5. — There is a *var.* of this tree (*B. pendula* Roth, *Lindl. Syn.* p. 229), with remarkably drooping branches, which are more verrucose than in the common appearance. It is not unfrequent in the Highlands of Scotland, and generally known by the name of the *drooping* or *weeping birch*. Mr. Babington distinguishes from this the *B. glutinosa* Fries, on account its cordate-ovate leaves: we have never seen such, and the figure in *E. B.* which he quotes shows them rounded, not cordate at the base. But the leaves of *B. álba* vary much in shape, being sometimes ovate and rounded at the base, sometimes cuneate, sometimes deltoid: the lateral lobes of the perianth also vary, being either erect or spreading, or even decurved, particularly in the *drooping Birch*; the cell of the fruit we find constantly as long as the wing, never shorter, as mentioned by Mr. Babington. — The wood is tough and white, and employed for various purposes. Much is burnt into charcoal. Brooms are made of it, and well-known instruments of castigation. Of the bark, in some countries, hats and drinking-cups are formed; and, what is more important, the oil obtained from the *degot*, or "*white rind*," is used in tanning the well-known *Russia leather*. It is, moreover, employed by the people of the same country as a vermifuge, and a balsam in the cure of wounds. A wine is made of the sap in Scotland. The whole tree diffuses an agreeable odour, and is noticed by Burns as the "*fragrant birch*."

2. *B. nána* L. (*dwarf B.*); leaves orbicular obtusely crenate glabrous, fruit orbicular with a narrow margin. *E. B.* t. 2326.

In several parts of the Highlands of Scotland. Rare in the Lowlands. *h.* 5. — A small shrubby plant, not exceeding 1—2 feet in height. Leaves on short footstalks. Fertile catkins at the extremity of the branches, small; their scales 3-fid to the middle or sometimes to near the base, variable in the same specimen. — Even this humble shrub the poor Laplander turns to use. It is almost all he meets with in certain situations, that can be converted into fuel for cooking food and driving away the gnats; and the dry foliage, covered with rein-deer's skin, serves him for a bed.

2. *A'LNUS* Tourn. Alder.

*Barren fl.* Scale of the catkin 3-lobed, with 3 flowers. *Perianth* 4-partite. *Stam.* 4. — *Fertile fl.* Scale of the catkin subtrifid, with 2 flowers. *Perianth* 0. *Ovary* with 4 minute scales at its base. *Fruit* without a membranaceous margin, compressed. — Name: derived by Théis from the Celtic, *al*, near, and *lan*, a river, but more probably from the Hebrew *Aelon*, a vigorous tree, and usually applied to the Oak.

1. *A. glutinosa* Gærtn. (*common A.*); leaves roundish-cuneiform obtuse lobed at the margin and serrated somewhat glutinous downy in the axils of the nerves beneath. *Betula Alnus L.: E. B. t.* 1508.

Wet meadows and moist grounds by water, frequent. *h.* 3—4. — A well-known tree, whose wood is employed for various purposes and is particularly valuable for the piles of bridges, as it remains undecayed under water for a considerable length of time; thus the celebrated and ancient bridge called the Rialto, at Venice, is built on Alder piles, and so are many large edifices at Amsterdam. The bark and leaves are employed in dyeing and tanning leather; the former for staining *sabots* or wooden shoes (which are also made of the tree) and fishermen's nets, its astringent quality strongly recommending it for the latter purpose. *Sterile catkins* long, large, and cylindrical, pendent, their foot stalks branched. *Fertile catkins* small, ovate, with deep-red scales.

## ORD. LXXXV. SALICACEÆ Rich.

*Flowers* diœcious, all amentaceous. — *Barren fl.* *Perianth* 0 (replaced by 1—2 nectariferous glands), or oblique and entire. *Stamens* 2—30: *anthers* 2-celled. — *Fertile fl.* *Perianth* 0 or turbinate. *Ovary* free, 1-celled, with numerous erect ovules attached to the bottom of the cell or to the base of 2 parietal placentas. *Style* 1 or 0. *Stigmas* 2, entire or cleft. *Fruit* leathery, 1-celled (or by the inflexion of the edges of the valves somewhat 2-celled), 2-valved, many seeded. *Seeds* erect, minute, covered with long silky hairs springing from their base. *Albumen* 0. *embryo* erect; *radicle* inferior. — Trees or shrubs. Leaves alternate, simple, with often glands on their edge or on the petiole. Stipules deciduous or persistent, sometimes none.

1. *SALIX*. Scales of the catkins entire, with 1—2 nectariferous scales, and no perianth. *Stam.* 1—5.
2. *POPULUS*. Scales of the catkins usually jagged, without nectariferous glands. *Perianth* cup-shaped containing the *stam.* and *pist.* *Stamens* 4—30.

1. *SÁLIX* Linn. Willow. Sallow. Osier.

*Scales* of the *catkins* quite entire. *Perianth* 0, except 1—2 unilateral nectariferous *glands* between the stamens or pistil and the rachis. — *Barren fl.* *Stam.* 1 (of 2 combined) or 2—5. — *Fertile fl.* *Stigmas* 2, entire or cloven into two. *Caps.* 1-celled. — Named, according to Théis, from *sal*, *near*, and *lis*, *water*, in Celtic; but the Welsh and Celtic name of the tree is *helig*, the Cornish one *helah*, and the Gaelic and Irish *seileach*, from any of which *Salix* is rather derivable.

The many important uses, rendered by the different species of *Willow* and *Osier*, serve to rank them among the first in our list of economical plants. The larger kinds, which are, too, of the most rapid growth, yield timber and exceed 60 feet in height; whilst the least of them, which grows on the summits of our Highland mountains (*S. herbacea*), can scarcely be said to rise above the surface of the soil in which it vegetates. Many are in great request for baskets, hoops, and crates: their bark is used by the tanner, and that of one species (*S. fragilis* var. *Russelliana*) as a substitute for the true Peruvian Bark. A correct knowledge of them, then, is of primary importance; yet there is not in the whole range of the vegetable creation, a genus liable to more variation in properties, as well as in foliage and general appearance, at different periods of growth, in different soils and situations, and under different circumstances; so that the accurate determination of its species, or even what constitutes a species, has baffled the researches of the ablest botanists. The figures in *Eng. Bot.* are rather portraits of individuals perpetuated by cuttings, than general representations of the species, which would have been better illustrated and understood had the specimens been raised from seed, or selected from truly wild plants. Of some it is said that we only know the barren plant; of others, only the fertile; either such cannot be indigenous, or the one kind may have put on so different an aspect as to be looked for among the allied supposed "distinct species:" according to our own observations the fertile plant is subject to more variation in the form of the leaves than the barren one, but both often vary extremely, rendering that character generally of no value even for distinguishing varieties. In an overloaded and confused diœcious genus like the present, we can only positively determine which is the sterile and what the fertile state of the *same* species, by raising them from seed: were this accomplished, we might reasonably expect, whenever the species was a good one, a double set of characters, each sufficient of itself; instead of having, as at present, only one, and that far from precise, taken partly from the pistillate, partly from the doubtful staminate plant. — We shall continue to adopt, with few deviations, the arrangement proposed by Mr. Borrer in the previous editions of the *British Flora*, and refer our readers there for full notes on all the species or varieties. But it is to be regretted that some general arrangement, not for a local flora only, but for the species of the whole world, were not de-

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## 1. SÁLIZ Linn. Willow. Sallow. Osier.

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vised and universally adopted; perhaps none hitherto attempted is superior to that of Koeh, with some slight modifications.

1. *Filament* 1, with a 4-celled anther, or forked upwards and bearing two 2-celled anthers. Capsules sessile, very pubescent. Catkins appearing before the leaves, lateral, sessile, with 2—3 small leaf-like bracts at the base; scales dark or purple at the end. Leaves linear or lanceolate, green or glaucous (not white and silky) beneath. Branches twigggy. *Monandra* Borr.

1. *S. purpurea* L. (*purple W.*); filament 1, capsule ovate, style very short or none, stigmas ovate entire or emarginate, leaves often opposite broader upwards acuminate serrulate, stipules none. —  $\alpha$ . decumbent, branches purple. *E. B. t.* 1388 (*bitter purple W.*). —  $\beta$ . erect, young branches purplish or yellow. *S. Lambertiana* Sm.: *E. B. t.* 1359 (*Boyton W., leaves lanceolate*). *S. Woollgariana* Borr.: *E. B. S. t.* 2651 (*Woollgar's W., leaves cuneate-lanceolate*).

Marshes and banks of rivers. *h.* 3—5. — *Antlers* in this and *Helix* purple, becoming at length black.

2. *S. Helix* L. (*Rose W.*); filament 1, capsule ovate; style conspicuous, stigmas bifid the segments nearly linear, leaves often opposite lanceolate broadest upwards acuminate serrulate, stipules none. *E. B. t.* 1343.

Marshes and the banks of rivers. *h.* 3, 4. — Mr. Leefe conjoins it with the last: and it only differs by the much longer style, and at length cloven stigmas: these last are sometimes entire when young, in which case they are ovate, as in *S. purpurea*. Branches erect: their bark glossy and yellow.

3. *S. Forbyana* Sm. (*fine Basket O.*); "monandrous, erect, leaves with small downy stipules lanceolate-oblong serrated above, style equal in length to the linear divided stigmas." *Borr.*: *E. B. t.* 1344.

Meadow and osier-grounds at Fincham, Norfolk, and near Lynn, Norfolk. *h.* 4. — "Stems yellowish-green, glossy. Allied to *S. Helix*, especially in the fructification, but differing in foliage. This species is much esteemed by basket-makers for the finer sorts of basket-work." All the flowering fertile specimens we have received have been cultivated under this name have, however, the stigmas linear entire, and do not differ from the next, with which Mr. Leefe joins it on account of its having stipules and constantly alternate leaves. The true sterile plant is as yet unknown; but Smith, judging from specimens in which some of the styles were converted into stamens, has described the latter as having a simple filament: we do not know the colour of the anthers.

4. *S. rubra* Huds. (*green-leaved O.*); filaments 2, united at base, capsule oblong-ovate, style elongated, stigmas linear divided, leaves alternate linear-lanceolate (broader in the sterile plant) acuminate serrate, stipules minute. *E. B. t.* 1145.

Low meadows and osier-holts, rare. Maidenhead; Windsor; near Salisbury; Cambridgeshire; Carlisle. Frequent in hedges and osier-grounds, Scotland. *h.* 4, 5. — A small tree, with longer and more lanceolate and acuminate leaves than any other in the present group, in the latter particular approaching, as Sir J. E. Smith remarks, *S. viminalis*, but wanting its dense white pubescence. The stamens are always more or less combined, below only, into one filament, as in *S. Cowsana*, which in other respects is quite a different plant: anthers yellow, becoming brown, but scarcely ever black, by drying.

ii. *Stamens* 3. *Ovary* stalked, usually glabrous. *Catkins* leafy, lax; their scales persistent, of the same pale colour throughout: "nectary double," Leeke. Leaves between lanceolate and ovate, glabrous, serrated. Stipules shorter than the petiole. Trees or large shrubs, casting their bark in autumn. Triandra Borr.

5. *S. triandra* L. (blunt-stipuled triandrous W.); leaves serrated, stipules half-cordate approaching to reniform blunt, scales of the catkins glabrous or slightly hairy, capsule glabrous, stigma nearly sessile. — *α.* leaves oblong-lanceolate, young branches not furrowed. *E. B. t.* 1435 (long-leaved tr. W.). — *β.* leaves linear-lanceolate green on both sides, young branches furrowed, capsule acuminate. *S. contorta* Crowe. — *γ.* leaves ovate lanceolate acuminate, young branches not furrowed. *S. Hoffmanniana* Sm.: *E. B. S. t.* 2620 (short-leaved tr. W.). — *δ.* leaves ovate or ovate-oblong glaucous beneath, young branches strongly furrowed. *S. amygdalina* L.: *E. B. t.* 1936 (Almond-leaved W.).

Banks of rivers and ditches and osier-grounds. *h.* 4—6. — The stipules, being modified leaves, vary in shape in the same species according to the form of the leaves themselves; but all the above have stipules of a very different form from the next species, to which however they approach in other respects. Stigmas varying from entire to bifid.

6. *S. \*undulata* Ehrh. (sharp-stipuled triandrous W.); leaves lanceolate much acuminate sharply and finely serrate often wavy, stipules half-cordate acute, scales of the catkins very villous, capsule glabrous (or silky) constricted above the middle, style as long as the bifid or emarginate stigmas. *S. lanceolata* Sm.: *E. B. t.* 1436.

Near Lewes, Sussex (the fertile plant, scarcely a native.) *h.* 4, 5. — A small tree, which casts its bark annually. It is cultivated and cut down every year for the use of basket-makers; but Mr. Forbes observes that it is not so well calculated for the finer sorts of wicker-work as *S. triandra*. Dr. Meyer of Göttingen has sent us specimens of the *S. undulata* of Ehrh., compared with the Ehrhartian herbarium; and Mr. Borrer is satisfied that they are identical with Smith's *lanceolata*; at least with the Sussex specimens communicated by Mr. Woollgar to him, and which are probably the



same as the fertile individuals figured in *E. Bot.* Indeed that station is the only one mentioned by Sir J. E. Smith as English. Mr. Borrer has received German specimens of *S. undulata* with silky germens, and they are probably the *S. undulata* of the *Salicetum Woburnense*, which differs only in that respect, and in its more wavy leaves, from our present plant.

iii. *Stamens more than 2, usually 5, distinct. Capsules ovate-lanceolate, stalked, glabrous. Catkins rather lax, appearing with the leaves on short lateral leafy stalks; the scales deciduous before the maturity of the fruit, of the same pale colour throughout: "nectary double,"* Leefe. *Leaves between lanceolate and ovate, glabrous, glossy, and fragrant, exuding a resin from their glandular serratures. Petioles glandular, especially towards the top. Stipules very deciduous. Trees or large shrubs. Pentandræ Borr.*

7. *S. pentandra* L. (*sweet Bay-leaved W.*); leaves elliptical-lanceolate acuminate, stamens 5 or more, style short, stigmas bifid, stalk of the ovary not exceeding twice the length of the gland. *E. B. t.* 1805. *S. Meyeriana Borr. in Hook. Brit. Fl., ed. 3. (not Willd. ?).*

Banks of rivers and watery places; most frequent in the north. *h.* 5, 6. — In its wild state it is a bushy shrub rarely above 6—8 feet high; but when cultivated and protected from injury, it becomes a tree 18—20 feet high. Its large and copious shining foliage almost gives this plant the appearance of an evergreen. *Sterile catkins* fragrant, as well as the *leaves*. In the wild plant the *leaves*, at the time of flowering, rarely exceed  $\frac{1}{2}$  of an inch in breadth, while they vary in length in specimens from the same marsh, from scarcely  $2\frac{1}{2}$ , when they are almost elliptical or ovate, to 3 inches, when they are oblong- or elliptical-lanceolate and much acuminate: in the cultivated tree they are usually much broader and larger; the sterile catkins too are much larger and more handsome than in the wild one: the stipules are said to be ovate-oblong, straight and equal-sided; but if we are not confusing specimens of the next, they are sometimes oblique and half-cordate, sometimes reniform on the autumnal shoots.

8. *S. \*cuspidata* Schultz (*cuspidate W.*); leaves oblong-lanceolate much acuminate, "stipules half-cordate oblique, stamens 3—4," style short, stigmas bifid, stalk of the ovary 3—4 times as long as the gland. *S. Meyeriana Willd.*

Near Shrewsbury; *Leighton*. *h.* 6. — With this we are not acquainted: the foliage as described is scarcely different from what we have seen in wild plants of the last; but there would seem to be a difference in the stipules and stalk of the ovary, if these be constant.

iv. *Stamens 2, distinct. Capsules elongated, glabrous. Catkins very lax, appearing with the leaves on short lateral leafy shoots; their scales deciduous. Leaves lanceolate, serrated, with stipules. Petioles scarcely glandular. Fragiles and Albæ Borr.*

9. *S. fragilis* L. (*crack-W.*); leaves glabrous or downy be-

neath when young, stipules half-cordate, capsules more or less stalked, style conspicuous, stigmas bifid.—*α*. leaves ovate lanceolate (glabrous or downy beneath), floral ones similar, ovary oblong-ovate scarcely longer than the scales, style shorter than the stigmas. *E. B. t.* 1807.—*β*. leaves lanceolate tapering at both ends (downy beneath when young), floral ones similar, ovary lanceolate-acuminate nearly twice as long as the scale, style the length of the stigmas. *S. Russelliana Sm. : E. B. t.* 1808 (Bedford W.).—*γ*. leaves lanceolate (quite glabrous), floral ones often obovate bluntish and recurved, “ovary tapering, style longer than the stigmas.” *S. decipiens Hoffm. : E. B. t.* 1937 (white Welsh or varnished W.).

Marshy woods and osier-grounds, in many places. *h.* 4, 5.—Young branches brittle, especially in the *var. α*.; but in *β*. they are in some situations equally so. *Var. β*. is an extremely valuable tree, and was first brought into notice by his Grace the late Duke of Bedford. Of the size to which it reaches, some interesting details are given in the Introduction to the *Salictum Woburnense*. It was a tree of this species, the favourite of Dr. Johnson at Lichfield, which was very recently destroyed by a hurricane, after it had attained a height of 60 feet, and a girth of 18 feet. Another, at Gordon Castle, Scotland, at the age of 61, was 57 feet high, and above 11 feet in its greatest circumference. So important is it as a plantation tree, that Mr. Lowe, in his Survey of the County of Notts., states that, at 8 years growth, the poles yielded a net profit of 214*l.* per acre; and in 2 years longer, they would probable have produced 300*l.* per acre. The late George Biggin, Esq. of Cosgrove Priory, an able chemist, ascertained that the bark contains the tanning principle in a superior degree to that of the Oak: it is supposed by some, that the medical properties said to belong to the *var. α*. are attributed to it by mistake, and should be referred to the present; this opinion, however, has not been confirmed. As to *var. γ*.; its “bark is polished like porcelain: the buds are black in spring: young shoots often crimson, the colour extending occasionally to the midrib of the leaves,” Leefe. The leaves of *var. γ*. are quite glabrous, pale and much reticulated beneath; of *var. α*. often broad at the base, glabrous or slightly downy beneath when young; and of *var. β*. narrower than the last and more downy beneath. *Var. β*. and *γ*. seem to occur nowhere in a wild state: of the former the fertile, and of the latter the sterile plants alone are, we believe, known, at least in this country.

10. *S. alba* L. (common white W.); leaves elliptical-lanceolate regularly glanduloso-serrate acute when young more or less silky beneath often so above, ovaries ovate-acuminate nearly sessile glabrous, stigmas nearly sessile short recurved bifid, scales short pubescent at the margin much shorter than the stamens and about the length of the ovary.—*α*. young leaves silky on both sides. *E. B. t.* 2430.—*β*. under-side of the leaves less silky ultimately quite glabrous and glaucous. *S. cærulea* (blue Willow), *E. B. t.* 2431.

River-sides, moist woods, &c. *h.* 5. — A well known tree of considerable size, and of which the *var. β.* is of such exceedingly rapid growth, that it is by many still deemed a distinct species; and Mr. Forbes observes that the new leaves, after the wood has been cut, are of a larger size, and, as well as the twigs, of a darker hue than the real *S. alba*. They seem to be alike valuable for their bark and their timber, and are both amply deserving of cultivation.

11. *S. vitellina* L. (*yellow W.*, or *golden Osier*); leaves lanceolate with glandular serratures acuminate more or less silky beneath often so above, germens lanceolate sessile glabrous, style short, stigmas bipartite, scales lanceolate pointed longer than either stamens or style. *E. B. t.* 1389.

Hedges and osier-grounds, in many places. *h.* 5. — This is rendered striking by the bright yellow colour of its branches, and the leaves often partake of the same tint. With this exception, the plant, as Mr. Borrer observes, is “*extremely* nearly allied to *S. alba*.” Mr. Leefe, and many others, conjoin them; and our only doubt arises from the long scales of the catkin imparting quite a peculiar aspect, a character, however, which Mr. Borrer does not notice, and none of the others are of much value.

v. *Stamens* 2, distinct. *Capsules* on long stalks, silky. *Catkins* short, lax, appearing before the leaves on short lateral stalks with sometimes a few leafy bractees at their base; their scales dark at the point, short, persistent. *Leaves* lanceolate, serrated, silky when young, with small stipules. *Griseæ Borr.*

12. *S. \*petiolaris* Sm. (*dark long-leaved W.*); leaves when young gray with long silky hairs especially beneath, capsules ovate-lanceolate, stigmas ovate nearly sessile, scales villous (black) scarcely longer than the pedicel. *E. B. t.* 1147.

Scotland; *Dickson*. Angushire and Possil Marsh, near Glasgow; *G. Don.* *h.* 4. — Not uncommon in North America, and certainly not a European species, although perhaps as wild in this country as most of our other tree-willows. A species very distinct from any of the preceding, nearly allied to *S. grisea* W., if not the same. *Branches* dark. *Leaves* dusky-coloured, grayish-green, silky with short soft hairs; in a young state even silvery beneath, afterwards almost glabrous.

vi. *Stamens* 2, distinct (or sometimes combined at the base?). *Capsules* distinctly stalked, silky. *Style* short. *Catkins* sessile, short and rather dense, bracteated at the base; scales discoloured at the end. *Leaves* small or narrow, or with a satiny pubescence. Small, erect, or procumbent shrubs. *Argentæ Koch* (*Rosmarinifoliæ, Fuscæ, and Ambigæ Borr.*).<sup>1</sup>

13. *S. \*rosmarinifolia* L. (*Rosemary-leaved W.*); erect, slender, leaves linear-lanceolate with a straight point silky (the

<sup>1</sup> We have conjoined Mr. Borrer's three groups. Between some forms of *S. fuscæ* with the upper side of the leaves downy or silky, and *S. ambigua*, there is

young ones especially) quite entire or with a few very minute glandular teeth, catkins at first shortly ovate or oblong afterwards more lax, ovaries stalked silky oblong-lanceolate acuminate, style about as long as the linear divided or entire stigmas, scales short villous. *E. B. t.* 1365.

Found by *Sherard*. Sent by *Mr. Dickson* to *Mr. Crowe*. (*Sm.*)  
*h.* 4. — A slender, upright shrub, 2—3 feet high, with silky leaves, nearly glabrous in the adult plant. Whole plant, when dry, often turning almost black, as does the following. *Mr. Leeche* observes that *S. rosmarinifolia*, L. and Koch, differs in the fertile catkins being almost round and very short, buried in the floral leaves, and not curved as in *E. Bot.*: we find them to vary much in these respects.

14. *S. angustifolia* Wulf. ? (*little Tree W.*); erect, slender, leaves linear-lanceolate nearly glabrous with minute glandular teeth the young ones silky glaucous beneath, catkins ovate erect, ovaries ovate-acuminate silky stalked, style about as long as the broad erect entire stigmas, scales very villous nearly as long as the young germens afterwards often as short as the stalk to the capsule. *S. Arbuscula Sm.*: *E. B. t.* 1366 (not of *Continental authors*).

Highlands of Scotland. Clova mountains. Near Dumfries. *h.*

4. — The large broad leaves represented in *E. Bot.* cannot belong to this species. *Mr. Forbes* has well observed that the present is so closely allied to the last that he is disposed to consider them the same; and it is certainly a matter of surprise, that two plants, so much resembling each other, should be placed so far apart as they are in *E. Fl.* Still we agree with *Mr. Borrer* in thinking them distinct, though the difference lies almost entirely in their germens, which are broader at the base in the present plant, with ovate and quite entire stigmas, and more shaggy scales. Although this may be, as *Sir J. E. Smith* assures us, the *S. Arbuscula* of *Linn. Herb.*, yet *Mr. Borrer*, on a recent examination, has come to a different opinion, and the plant is quite at variance with the *Arbuscula* of other Continental authors, and with the figures both of *Linnæus* and *Wahlenberg*, which represent the leaves distinctly serrated.

15. *S. Doniana* Sm. (*Don's W.*); branches at first procumbent then erect and twiggy, leaves partly opposite oblong-lanceolate broadest above the middle acute slightly serrated even livid and somewhat silky beneath, stipules linear, catkins erect cylindrical compact, ovaries stalked silky longer than the obovate scale, stigmas short emarginate. *E. B. S. t.* 2599.

absolutely no difference, except that the leaves of the former then exhibit less evident serratures, a more prominent venation above, and have the point of the leaves conspicuously bent back to one side. *S. fusca* and *S. ambigua* have broad leaves; the first has them usually glabrous above, and there, when dried, prominently reticulated and often black; the latter always of an ashy colour. *S. rosmarinifolia* has narrow silky leaves with linear stigmas; *S. angustifolia* narrow leaves, broad erect stigmas, and lax short catkins; *S. Doniana* usually narrow leaves and dense catkins.

Scotland. *h*. 5. — *Shrub* 6 feet or more high, resembling *S. purpurea*, but Mr. Borrer considers it correctly placed in the present division, on account of its stalked germen, which have little resemblance to those of the *Monandra*, but are closely analogous to those of *S. fusca*, to which species he thinks there is considerable affinity in the foliage also. We believe that the plant with *sterile flowers* is unknown. Mr. Babington and Mr. Leefe, indeed, mention that the stamens are said (we do not know on what authority) to be monadelphous, and the anthers ultimately yellowish-brown, not black; but perhaps one of the *Monandra* has been mistaken for it.

16. *S. fusca* L. (*dwarf silky W.*); leaves elliptical or elliptic-lanceolate or linear-lanceolate broadest about the middle acute entire or with minute glandular serratures somewhat downy glaucous and generally very silky beneath, ovaries upon a long stalk lanceolate very silky, stigmas bifid. *S. repens Hook. Scot.* 1. p. 284. —  $\alpha$ . stem much branched upright decumbent below, leaves elliptical-lanceolate with a straight point. *S. fusca E. B.* t. 1960. —  $\beta$ . stem depressed with short upright branches, leaves elliptic-lanceolate with a straight point. *S. repens E. B.* t. 183 (*with young leaves only*). —  $\gamma$ . stem prostrate with elongated straight branches, leaves elliptic-oblong with a curved point. *S. prostrata<sup>1</sup> E. B.* t. 1959. —  $\delta$ . stem recumbent, leaves elliptical. *S. foetida Sm. E. Fl.* vol. iv. p. 208. *S. adscendens E. B.* t. 1962. *subvar.* leaves smaller. *S. foetida  $\beta$ . E. Fl.* vol. iv. p. 208. *S. parvifolia E. B.* t. 1961.: *Salict. Wob.* p. 161. t. 81. —  $\epsilon$ . stem procumbent or erect, leaves elliptic-lanceolate with a recurved point. *S. incubacea L.: E. B. S.* t. 2600 (soon glabrous above). *subvar.* leaves long, covered with dense gray pubescence above, and sometimes narrow. —  $\zeta$ . stem erect or spreading, leaves elliptical with a recurved point very silvery beneath usually long, covered with gray pubescence above. *S. argentea E. B.* t. 1364.

Moist and dry heaths, moors and sandy situations. *h*. 4, 5. — Mr. Borrer not only consents to the union of the above-mentioned species of other authors, but has suggested the order of their arrangement, with the single exception of *S. fusca* of *Sm.*, which he is disposed to consider different from that of *Linnaeus*, at least as seen growing in the garden; for he allows that "the dried specimens show no character;" in which latter opinion we cordially agree with him. — The plant itself is usually a small *shrub*, with rather long straight *branches*, but varying exceedingly, according to situation and other circumstances; as do the *leaves*, which are more or less glabrous above in the first four varieties, while in the two last they are often downy above for a much longer period and do not acquire by drying the dark colour of the others; all are more or less silky beneath where the nerves are prominent, and prominently reticulated above.

<sup>1</sup> The Epping Forest "*prostrata*," in *E. Fl.* is, on the authority of Mr. R. Forster, one of the varieties of *S. ambigua*.

17. *S. ambigua* Ehrh. (*ambiguous* W.); "leaves oval obovate or lanceolate pubescent slightly toothed with a recurved point somewhat rugose above glaucous with prominent veins beneath, catkins stalked erect cylindrical, germen stalked densely silky, style very short, stigmas short at length cloven." *Borr.* in *E. B. S. t.* 2733. —  $\alpha$ . leaves oval or obovate moderately hairy. *S. ambigua* Ehrh. (not of *Pursh*). *S. versifolia* Ser. —  $\beta$ . leaves obovate very silky on both sides. —  $\gamma$ . leaves obovate lanceolate or oblong moderately hairy or silky. *S. spathulata* Willd.

$\alpha$ . Gravelly heaths. Sussex, Essex, Suffolk. Perthshire, Aberdeen, Inverness, Angus, Caithness, Orkney and the Hebrides. —  $\beta$ . Bogs near Forfar. —  $\gamma$ . Epping Forest; Hopton, Suffolk. Between Balnagard and Aberfeldie, Scotland. *h.* 5. — A straggling shrub, with branches sometimes procumbent, sometimes rising a foot or two from the ground; at other times it is of an upright growth, 3—4 feet high. Young twigs downy. Leaves thin, somewhat rugose, with veins sunken above and prominent beneath; upper side variable as to pubescence and silkiness; under sometimes quite bare and glaucous, but usually with copious appressed silky or cottony hairs; edges more or less recurved. "*S. ambigua* approaches on the one side to *S. aurita*, with the smallest varieties of which it is most likely to be confounded, and on the other to *S. fusca*; differing from the former by its less rugose, less vaulted, and less distinctly serrated leaves, and their more delicate texture and less woolly pubescence, and the smaller, flatter and less oblique stipules; from the latter by its less silvery pubescence, and the more uneven upper surface of its leaves, and the more prominent veins beneath." *Borr.* Koch regards it as a hybrid between the two. They are altogether extremely *ambiguous* plants. The var.  $\beta$ . is of the most peculiar aspect: we have never seen any specimens, except those from Mr. Drummond, and what we ourselves collected in Restennet Moss near Forfar.

vii. *Stamens* 2, distinct. *Capsules* crowded, sessile, oblong-ovate, downy. *Stigmas* ovate, almost sessile. *Catkins* cylindrical, terminal, stalked, appearing with the full-grown leaves. *Scales* pale brown. *Leaves* roundish, extremely reticulated beneath. *Dwarf alpine shrubs, with the stem creeping below the surface of the ground. Reticulate Borr.*

18. *S. reticulata* L. (*reticulated* W.); leaves nearly glabrous above, glaucous beneath. *E. B. t.* 1908.

Lofty mountains of the middle and north of Scotland. *h.* 6, 7. — A species said to have been found in England and Wales, but not on good authority. *Stem* short, very woody, much branched, procumbent, when cultivated forming a beautiful tuft of considerable extent, with its curiously reticulated and large handsome leaves white or glaucous on their under-side. The catkins and stems have a reddish or purplish tinge.

viii. *Stamens* 2, distinct. *Capsules* sessile, ovate, very downy or silky. *Catkins* somewhat compact, lateral, appearing with the leaves; their

scales discoloured at the end. Leaves between roundish-ovate and oblong-lanceolate, soft, hairy and silky, often white and cottony beneath. Small erect shrubs. *Glaucæ Borr.*

19. *S. arenaria* L. (*downy Mountain W.*); leaves cottony and sometimes also silky beneath, catkins usually naked at the base rarely on lateral leafy shoots, style at length elongated bifid at the apex with bipartite stigmas.—*a.* leaves with gray or whitish wool or down on the upper-side, which sometimes falls off through age leaving the dull surface of the leaf, styles always elongated, catkins leafless. *E. B.* t. 1809. *S. Stuartiana* Sm.: *E. B.* t. 2586. *S. limosa* Wahl.—*β\**. leaves elliptic-lanceolate, very soon quite glabrous and shining above, styles usually short at first, lengthening as the fruit ripens, catkins leafless (or rarely on lateral leafy shoots). *S. glauca* Sm.: *E. B.* t. 1810.

*a.* Highland mountains, especially those of Breadalbane and Clova. *h.* 6, 7.—It is almost impossible to refer the Linnæan synonyms to these plants, without some objections being started. Our var. *a.* is certainly the *S. arenaria* L.; but that name was given in consequence of Linnæus confusing with it *S. fusca* var. *ζ.*, which alone merited it. The *S. arenaria* Sm. appears to be the *S. Lapponum* L., as to the synonym of the *Flor. Lapponica* (where he says *folia subtus crassissimo vellere albo tecta*) and perhaps of the first edition of the *Flor. Suecica*, but not that of the second, where *S. sericea* Vill. is described; and this last, according to Smith, is the *S. Lapponum* of the Linnæan herbarium: again, *S. Stuartiana* Sm. seems to be the state of *S. arenaria*, of which a leaf is figured in the *Flor. Lapponica*. The variety *a.* varies much in the foliage: we have collected specimens in the Clova mountains with some leaves roundish-obovate and slightly cordate, and others elliptic-oblong: this we suspect to be the *S. lanata* of G. Don, the leaves being more white and woolly than usual on both sides. *S. arenaria* Sm. is said to have the leaves ovate, acute, and only slightly downy above, while in *S. Stuartiana* they are sometimes narrow oblong-lanceolate and very shaggy above; but these are extremes; and there is a complete transition in the form of the leaves and pubescence, the latter not always becoming denser as the leaves are narrower: we do not therefore distinguish them. For our var. *β.* we give no stations, because we have no reason to believe it indigenous. Mr. Don's specimens now before us from the Clova mountains being the same as var. *a.*, and belonging to *S. arenaria* E. Bot.: it is commonly cultivated, being a handsome plant, and is common in Switzerland (where we believe our var. *a.* does not occur), but is not, so far as we know, found either in Sweden or Lapland: it has more pretensions to be called a distinct species than most others of the genus. From this, *S. sericea* Vill. (*S. Lapponum* Linn., at least in part, and *S. glauca* of the Swiss and German Botanists, and perhaps also of Linn. Fl. Lapp., but apparently not of his herbarium) differs by the bipartite styles, and total want of cottony down on the leaves, the silky hairs found on both sides being rubbed off, leaving them glaucous beneath: the catkins are more constantly on lateral leafy shoots.

ix. *Stamens* 2, distinct. *Capsules* shortly stalked or almost sessile, somewhat lanceolate, hairy or silky. *Style* conspicuous. *Catkins* lateral, nearly sessile, appearing with the leaves, with leaf-like bractes at the base; their scales discoloured at the end. *Trees* of a more or less considerable size, with long pliant branches. *Leaves* lanceolate. *Viminalis* Borr.<sup>1</sup>

\* *Stigmas* long, linear and slender.

20. *S. viminalis* L. (common *Osier*); leaves linear or linear-lanceolate obscurely crenate white and silky beneath, stipules very small sublanceolate, ovaries almost sessile. *E. B.* t. 1898.

Wet places, osier grounds, &c., frequent. *h.* 4, 5. — *Branches* straight and twiggy. This is held in great esteem for basket-work.

21. *S. stipularis* Sm. (auricled *O.*); leaves lanceolate very indistinctly crenate white and downy beneath, stipules large semicordate acute often with a tooth or lobe at the base, ovaries nearly sessile. *E. B.* t. 1214.

Osier-holts, hedges and woods, near Bury St. Edmund's. *h.* 3—5. — Allied to the preceding in fructification; differing in its large and coarser leaves, less white beneath, and with large stipules on the autumnal shoots.

22. *S. Smithiana* Willd. (silky-leaved *O.*); leaves lanceolate obscurely crenate white and satiny beneath, stipules very small narrow acute, ovaries distinctly stalked. *S. mollissima* *E. B.* t. 1509.

Meadows and osier grounds. About Bury; Glamorganshire; near Warrington. Scotland. *h.* 4, 5. — We place no dependance on the size of the stipules in this and the two preceding (which are perhaps forms of the same species), and besides they are not available to a student. The only other character between the present species and *S. stipularis* consists in the almost sessile or distinctly stalked ovary, and we should therefore have conjoined them, did not Mr. Leefe consider that of sufficient importance to remove *S. Smithiana* to a separate section, while he refers *S. stipularis* as a variety to *S. viminalis*.

\*\* *Stigmas* thick, oblong or linear-oblong. *Ovary* distinctly stalked; the stalk scarcely twice as long as the nectary.

23. *S. \*acuminata* Sm. (long-leaved *Sallow*); leaves lanceolate-oblong pointed wavy finely toothed glaucous and downy beneath, stipules half-ovate, stigmas oblong or oblong-linear. *E. B.* t. 1434. *S. rugosa* Bab.?

Rather moist woods and hedges, frequent. *h.* 4, 5. — A small tree, seldom above 20 feet. Not to be distinguished from the two last, when in flower, except by the shorter stigmas. Mr. Borrer ob-

<sup>1</sup> We can scarcely point out any positive character by which to distinguish the second subdivision of this section from the *Cinereæ*: in all those which we have examined, the catkins of the present group appear along with the leaves, the capsule is on a shorter stalk, and the stigmas are never sessile.



serves that it is the *S. lanceolata* of Seringe: in that species, however, the stigmas appear to be constantly cloven, in ours constantly entire.

24. *S. ferruginea* And. (*ferruginous S.*); leaves lanceolate with wavy crenatures and small teeth minutely hairy on both sides paler beneath, stipules small half-ovate, stigmas oblong, *E. B. S. t.* 2665.

Near Carlisle; Kirkby-Lonsdale; banks of the Thames; Nut-hurst, Sussex. Fifehire. *h.* 4, 5. — According to Mr. Forbes, a shrub, 12—14 feet high. *Leaves* less hairy than the last.

x. *Stamens* 2, distinct. *Capsules* lanceolate-acuminate, silky, tomentose, conspicuously stalked; stalks three (or more) times longer than the nectary. *Style* none or much shorter than the ovate or oblong thick stigmas. *Cutkins* sessile, lateral, at first short, afterwards more lax, appearing before the leaves; their scales discoloured at the end. *Leaves* more or less wrinkled and stipuled, very veiny beneath: stipules without glands on the inside. *Trees* or low shrubs. *Cinereum* Borr.

25. *S. holosericea* Willd. (*soft shaggy-flowered Willow*); leaves lanceolate acuminate serrate glabrous above, pale downy and strongly veined beneath, catkins cylindrical, germen stalked densely clothed with silky wool, stigmas ovate sessile, scales (black) very shaggy.

About Lewes, Sussex. *h.* 4, 5. — This is a plant which Mr. Borrer received from Sir J. E. Smith, marked *S. acuminata* var. *rugosa*; but which he thinks probably allied to the *S. holosericea* of Willd. and distinguishes it from the true *S. acuminata* by its sessile pale-coloured stigmas, and leaves greener and more rugose above, and more strongly veined beneath: trusting to which we have removed it from the *Viminalis* to the present section. Mr. Babington, however, under the name of *S. rugosa* Sm., gives a quite different description of the style and stigmas, agreeing with the more rugged-leaved form of *S. acuminata* noticed by Smith, *E. Fl. iv. p.* 228; and if his plant be that meant by Mr. Borrer, we have little hesitation in reducing it to that species.

26. *S. cinérea* L. (*gray Sallow*); leaves obovate obovato-elliptical or obovato-lanceolate, autumnal ones pointed even serrated reticulated with prominent veins nearly glabrous and glaucous beneath with the margins sometimes recurved, stipules rounded toothed upper ones often half-cordate, style very short or none. *E. B. t.* 1897 (autumnal leaves narrow rigid and their margins recurved). *S. aquatica* Sm.: *E. B. t.* 1437 (autumnal leaves broader larger more pliant nearly flat). *S. oleifolia* Sm.: *E. B. t.* 1402 (aut. leaves narrower rigid nearly flat).

Banks of rivers, wet hedge-rows, moist woods, and swampy places, abundant. *h.* 3, 4. — Often only a shrub, with an erect stem and erect or spreading branches, but when protected it becomes a tree 20—30 feet high, with hanging branches. It is of no beauty and

little use. In specimens of "*S. cinerea*," named by Sir J. E. Smith himself, the lower stipules are as reniform as in the two other supposed species, which we cannot distinguish as permanent varieties.

27. *S. aurita* L. (*round-eared S.*); leaves obovate repandodentate wrinkled with veins more or less pubescent very downy beneath, tipped with a small bent point recurved at the margin, stipules roundish, style very short. *E. B. t.* 1487.

Moist woods and thickets, abundant. *h.* 4, 5. — A tall shrub or small bushy tree, with straggling branches. "One of the least equivocal species; although its leaves vary in length and roundness: they are usually much wrinkled and vaulted, the stipules large and stalked." *Borrer*.

28. *S. caprea* L. (*great round-leaved S.*); leaves roundish-obovate or ovato-elliptical even acute, at first entire downy above tomentose beneath, autumnal ones serrated and wavy at the margin nearly glabrous above downy beneath, stipules somewhat reniform toothed, style very short or none. *E. B. t.* 1488. *S. sphacelata* Sm.: *E. B. t.* 2333.

Woods and dry pastures, common. *h.* 4, 5. — A small tree, distinguished by being in spring loaded with handsome yellow blossoms before any of its leaves appear. The catkins of both kinds are broader and shorter than in most of the species with crowded flowers. The Highlanders employ the bark to tan leather, and the handles of various agricultural implements are made of the wood. The bark has been used with success, instead of that from Peru. Various species of *Salix* have occasionally their leaves sphacelate or discoloured at the point; and such varieties may sometimes be propagated by cuttings: that called *S. sphacelata* by Smith seems to be that state of the present species, and is probably not unfrequent.

xi. Stamens 2, usually distinct. Capsules conspicuously stalked, conical-subulate. Style elongated, bifid. Stigmas short. Catkins lateral, sessile, or on short bracteated but not leafy stalks; the scales discoloured at the end. Leaves crenate-dentate or serrated, between roundish-obovate and lanceolate, stipules when conspicuous with glands on their inside at the base. Shrubs or small trees. Phyllicifoliæ (*Nigricantes* and *Bicolores* *Borr.*).

29. *S. nigricans* Sm. (*dark-leaved S.*); young shoots densely pubescent or hairy towards the summit, leaves usually dull more or less glaucous beneath turning black by drying (especially the young ones). —  $\alpha$ . ovaries and stalks silky, stems erect. *S. cotinifolia* Sm.: *E. B. t.* 1403 (leaves elliptical-orbicular and often cordate at the base). *S. nigricans* *E. B. t.* 1213 (leaves elliptic-lanceolate). *S. Forsteriana* Sm.: *E. B. t.* 2344 (leaves elliptic-obovate acute). —  $\beta$ . ovaries silky or glabrous at the base where covered by the scale, stalk hairy, stems trailing (leaves elliptical-obovate). *S. rupestris* Donn.: *E. B. t.* 2342. —  $\gamma$ . ovaries glabrous, stems erect. *S. hirta* Sm.: *E. B. t.* 1404

(leaves elliptic or elliptic-oblong, branches densely hairy, capsule not wrinkled, its stalk very hairy). *S. Andersoniana* Sm.: *E. B. t.* 2343 (leaves elliptic oblong, branches minutely downy, capsule not wrinkled, its stalk very hairy or quite glabrous). *S. Damascena* Forb. *E. B. S. t.* 2709 (leaves ovate or rhomboidal, capsule not wrinkled, stalk hairy or glabrous). *S. petraea* And.: *E. B. t.* 2725 (leaves oblong, capsule wrinkled towards the point, stalk hairy).

Fens, osier-grounds, sides of streams, and on the mountains, principally in the north of England and Scotland. *h.* 4—6. — A most variable species; but in this country, whether cultivated or wild, the foliage constantly turns black when pressed and dried, however carefully this be done. We must allow, however, that Swiss specimens do not exhibit this character so decidedly, and hence Mr. Seringe joins it with *S. phylicifolia*, and indeed there is scarcely any other difference between them. Between the forms represented and described in *E. Bot.*, and the *Supplement*, and the *Eng. Flora*, are innumerable intermediate ones; so that if they be good species, we must increase their number without end. Our *var. β.* we only retain distinct from *α.*, because it is more decidedly alpine and trailing, and Mr. Forbes observes that its branches are tough and useful for tying: in the herbarium it cannot be recognized, and indeed Mr. Borrer referred specimens gathered by ourselves on Ben Lawers to *S. Forsteriana*; it is usually said to have the stigmas "blunt and undivided," which applies to most cultivated specimens, but wild ones show them entire and bipartite on the same catkin, and even on the same style. As to our *var. γ.*, there seem to be two states: in the one the stalks to the ovaries are very hairy, in the other glabrous or nearly so: in Mr. Borrer's specimens of *S. Andersoniana* they are hairy, while Smith describes them glabrous: in Mr. Winch's specimens from Heaton Dene the stalks are hairy, although glabrous in those cultivated from cuttings sent by him (under the erroneous name of *S. Forsteriana*). We find *S. Damascena* to vary in the same way.

30. *S. laurina* Sm. (*intermedia* W.); young shoots and leaves densely pubescent or hairy towards the summit, leaves at length glabrous glaucous beneath dull green above after being dried (except the young ones which sometimes become slightly black). — *α.* stalk of ovary hairy. *S. propinqua* Borr. *E. B. S. t.* 2729 (leaves elliptical acute  $1\frac{1}{2}$ —2 inches long, ovary glabrous below). *S. tenuior* Borr.: *E. B. S. t.* 2650 (leaves narrow obovate-lanceolate  $2\frac{1}{2}$ —3 inches long, ovary silky, style longer than the stigmas). *S. laurina* Sm.: *S. bicolor* *E. B. t.* 1806 (leaves elliptic oblong acute  $2\frac{1}{2}$ —4 inches long, ovary silky, as long as the stigmas). — *β.* ovary and stalk quite glabrous. *S. tenuifolia* Sm.: *E. B. S. t.* 2795 (leaves elliptical acute or pointed more serrated about  $2\frac{1}{2}$  inches long).

Woods, thickets and river-banks, principally in England. *h.* 4, 5. — This species has the thinner and duller foliage of the last; but the leaves, except the upper ones on a shoot, do not turn black in

drying: thus it holds a kind of intermediate place, and appears to unite the two. The form called *S. laurina* by Smith (or *S. bicolor* E. B.) has the leaves considerably larger than the others and it often becomes a small tree; it thus is in some measure allied with *S. caprea*; the style likewise is shorter than we usually find in this group, the stigmas are often bipartite, and the scales frequently as long or longer than the stalk of the ovary, contrary to the description usually given. Of our var.  $\beta$ . we have only seen the leaves.

31. *S. phylicifolia* L.: Wahl. (*Tea-leaved W.*); branches twiggy, shoots and leaves soon quite glabrous, leaves dark green rigid shining above and glaucous beneath not becoming black by drying, stigmas entire or bipartite before dividing oblong or ovate (rarely linear?).— $\alpha$ . ovaries and stalk silky or hairy. *S. radicans* Sm. *S. phylicifolia* E. B. t. 1958 (leaves obovate or elliptic-lanceolate, style elongated). *S. Davalliana* Sm.: E. B. S. t. 2701 (leaves obovate-lanceolate pointed, style as long as the stigmas). *S. Weigeliana* Borr.: E. B. t. 2656 (leaves broadly elliptical rhomboidal or almost round with a short point, style longer than the stigmas). *S. amœna* Borr. *S. nitens* Ander.: Borr. in E. B. S. t. 2655 (leaves ovate or elliptical acute or pointed, style longer than the stigmas). *S. Croweana* Sm.: E. B. t. 1146 (leaves elliptic-obovate scarcely acute, stamens united at the base, style about as long as the stigmas). *S. Dicksoniana* Sm.: E. B. t. 1390 (leaves elliptic or elliptic-obovate with a point, style about as long as the stigmas).— $\beta$ . ovaries glabrous below silky towards the point. *S. laxiflora* Borr.: E. B. S. t. 2749 (leaves broadly obovate narrowed at the base, stigmas linear divided?) *S. tetrapla* Walk.: E. B. S. t. 2702 (leaves elliptic oblong pointed). *S. Weigeliana* var. Borr. sub. E. B. S. t. 2656 (leaves elliptical rhomboidal or almost round with a short point).— $\gamma$ . ovaries entirely glabrous. *S. Borreriana* Sm.: E. B. S. t. 2619 (leaves broadly or elliptical-lanceolate, stalk of ovary hairy, style elongated). *S. phillyreifolia* Borr.: E. B. S. t. 2660 (leaves elliptic lanceolate acute at each end, stalk of ovary glabrous, style as long as the stigmas).

Principally in valleys in mountainous districts; rarely in the low parts. *h.* 4, 5.—*Twiggy bushes*. We can find no good characters to distinguish the above numerous supposed species; and notwithstanding we have been supplied with cultivated specimens by Mr. Borrer in illustration of the figures in *E. Bot.* and the *Supp.*, we cannot refer our wild ones (and those we have ourselves obtained from gardens) with certainty to any of them, so variable is the foliage on the same bush. The figure of *S. Dicksoniana* in E. B. is taken apparently from a specimen in which the catkins are very young; they afterwards elongate, but are scarcely ever more than  $1\frac{1}{2}$  times their breadth when the capsules are mature; it is a smaller shrub than usual in this species, and in that respect more like the next group; its stigmas are at length bifid. *S. Croweana* has certainly the ovaries very cottony, as Smith says, though they are represented glabrous in the *Sal.*

Wob. t. 52, "by a mistake of the artist," *Forbes in litt.* We have the fertile plant of apparently the same from the Ed. Bot. Garden, where it was introduced by the late Mr. MacNab and marked "common about Edinburgh:" a specimen from Smith has the stamens scarcely monadelphous even at the very base, and the accompanying leaves do not differ from those of *S. nitens*; Mr. Borrer's fertile plant with glabrous germen is possibly *S. phillyrifolia*. We are not acquainted with *S. laxiflora*, and have seen no form with long linear stigmas as in the figure and description of that species in *E. B. Supp.* We cannot refer *S. bicolor* Ehrh.? (*S. tenuifolia* E. B. t. 2186, and *S. floribunda* Sal. Wob. t. 54) to any of the above varieties, as the fertile plant is not as yet known with certainty; but the same form of leaf occasionally occurs in *S. Borreriana*, *amæna* (which is the *Weigeliana* Willd. and Sal. Wob.), and also in *S. nitens*; Mr. Forbes, however, remarks that the "young leaves are tinged with red." The foreign *S. bicolor* seems to be precisely *S. Croweana*, but with the stamens distinct.

- xii. *Stamens 2, distinct. Anthers yellow or brown when empty. Ovaries oblong or ovate, densely pubescent, nearly sessile; stalk when present much shorter than the nectary. Style as long as the ovate emarginate or cloven obtuse stigmas. Catkins appearing along with the leaves, terminal on short few-leaved lateral shoots, at first very compact; scales of a uniform yellowish-brown colour when dried, half as long as the ovary, hairy. Leaves more or less veiny above; stipules none or minute. Small erect or diffuse rarely prostrate shrubs: stems above ground. Vacciniifoliæ Borr.*

32. *S. Arbúscula* L.: Wahl. (*small Tree W.*); leaves lanceolate-ovate or ovate finely serrated. *S. myrsinites* Lightf. — *α.* leaves opaque above glaucous beneath. *S. vacciniifolia* Walk.: *E. B.* t. 2341 (leaves flat smaller narrower and less prominently veined above). *S. venulosa* Sm.: *E. B.* t. 1362 (leaves flat narrow ovate very much veined above). *S. carinata* Sm.: *E. B.* t. 1363 (leaves ovate folded so as to form a keel). *S. prunifolia* Sm.: *E. B.* t. 1364 (leaves broadly ovate flat). — *β.* leaves (broadly or roundish ovate prominently veined above) green but scarcely shining on both sides.

*α.* Highland mountains, not unfrequent. — *β.* Ben Lawers. *h.* 6, 7. — "Twigs of the fertile plant red of the sterile dull green." *Lightf.* All these are, we believe, decumbent "shrubs" on their native mountains, but when cultivated, they become more erect and about 2 feet high. As a species this is closely allied to *S. prostrata* Ehrh., which however has narrow entire leaves. We cannot satisfactorily distinguish Smith's four species: he separates *S. vacciniifolia* chiefly on account of the leaves being narrower and silky beneath and the stem decumbent; but the leaves are frequently, and when old always, glabrous, and besides all the others are in the wild state occasionally silky beneath; so that his attributing a decumbent stem to it and an erect one to the others may arise from his description of it having been made from wild specimens, of the others from cultivated plants. Our var. *β.* we

never met with but once, and long hesitated whether to refer it to the present or to the next group: it is indeed precisely intermediate, and may perhaps be a hybrid between some of the forms of *S. Arbuscula* and *S. myrsinites*: the leaves are not glaucous beneath, and the catkins are shorter and more lax than in this group; but the ovaries are almost sessile, and the colour of the scales and the numerous lateral flower-shoots indicate its greater affinity to *S. Arbuscula*: in some respects it is very closely allied to *S. ovata* Ser., but wants the silky hairs so abundant in young leaves of that species.

xiii. *Stamens 2, distinct. Anthers yellow or brown when empty. Ovaries lanceolate, silky, stalked; stalks usually as long as, or at length longer than, the gland. Style more or less deeply bifid, as long as the cloven obtuse stigmas, or longer. Catkins appearing with the full-grown leaves, terminal on lateral or terminal leafy shoots, soon becoming lax; scales blackish when dried, hairy and shining above, much shorter than the ovary. Leaves veiny, never glaucous beneath; stipules ovate or lanceolate, conspicuous on the autumnal shoots. Small, much branched shrubs; stems above ground. Myrsinites Borr.*<sup>1</sup>

33. *S. myrsinites* L. (*green Whortle-leaved W.*); leaves waved serrated with very prominent veins often hairy at length shining blackish when dried (catkins short, style cloven to the middle, longer than the stigmas?).—*α.* leaves roundish or elliptical or obovate. *E. B.* t. 1360.—*β.* leaves (smaller) somewhat cordate at the base.—*γ.* leaves (smaller than *α.*) ovate or oblong rather acute. *S. arbutifolia* Sm. *S. myrsinites* Linn. *Lapp.* t. 7. f. 6. t. 8. f. f.: *Fl. Dan.* t. 1054.—*δ*? leaves lanceolate.

Highland mountains, but rare.—*α.* Craig-challeach; Braigh-Riach; Clova mountains. — *β.* Clova mountains (July 1824). — *γ.* Craig-challeach. — *δ.* Clova mountains. *h.* 6. — We do not find catkins on any of our Scotch specimens, and therefore cannot be quite certain that this portion of the above character applies to them. The figure in *E. B.* is from cultivated specimens; Mr. Stuart's plant from Glen Coe, quoted there, belongs to *S. procumbens*; but Mr. Dickson's was probably the same as our own and from the Braedalbane mountains. Of our var. *δ.* we have only seen a single specimen; some of its leaves are  $1\frac{1}{2}$  inch long and only  $\frac{1}{2}$  inch broad, they are hairy, but shining when the hairs are rubbed off. In *S. arbutifolia* of Switzerland the leaves, which are not twice as long as broad and are always pointed, seem never to become black when drying; and its catkins are almost as elongated in the next species.

<sup>1</sup> *S. retusa* is a prostrate glabrous shrub, with veiny obovate-elliptical or cuneate oblong not glaucous leaves, glabrous ovate shortly stalked gemmae, the stalks longer or shorter than the petiole in the same catkin, and catkins usually few-flowered and similar to those of *S. herbacea*. Fries states that beautiful specimens of the var. *serpyllifolia*, collected by Mrs. Winch in Braedalbane, are preserved in Hornemann's herbarium. This must be a mistake: Mr. Winch's *S. retusa* is that of Withering or *S. procumbens* Forbes and is widely different from the true one, which is not, we believe, a northern species, and is considerably unlike any either of the present or last group. We have, however, what may perhaps be a large cultivated variety of this plant from the Ed. Bot. Garden, under the name of *S. herbacea* var., although we have no reason to suppose that it was brought from our mountains.

34. *S. procumbens* Forbes (*smooth-leaved alpine W.*); leaves oval (rarely acute) obscurely serrated shining quite glabrous not black when dried, catkins elongated, style cloven to the middle (or below it) as long as the stigmas. *Sal. Wob. t. 61.*: *E. B. S. t. 2753.* *S. retusa* With. *Bot. Arr. t. 31.* *S. lævis Brit. Fl. ed. 1. p. 482.*

Highlands of Scotland. Glen Coe. Braedalbane mountains, 1801. *h. 6.* — A low procumbent shrub, bearing a considerable resemblance to the last, but distinct, if our description of its catkins applies to British specimens. It was originally communicated to Withering "by Mr. Griffith, to whom Mr. Townson sent roots from Scotland under the name of *retusa*," and first noticed in one of the early editions of his work: it is also inserted in Hull's *Brit. Flora* in 1799. Mr. Winch found it in 1801, but he retained no notes of the precise locality, and it has not been re-discovered. Where Mr. Stuart met with it we do not know. The catkins are in maturity three or four times as long as those of *S. myrsinites*; the leaves are flatter, less serrated at the margin, and dry to a yellowish-brown colour.

xiv. *Stamens 2, distinct. Anthers yellow or brown when empty. Ovaries ovate-lanceolate, shortly stalked; stalk mostly shorter than the gland. Style bifid, as long as the obtuse bifid stigmas. Catkins appearing with the full-grown leaves, terminal, few-flowered; scales brownish, glabrous. Leaves roundish, serrated, with elevated veins, glabrous, not glaucous. Dwarf alpine prostrate shrubs, the stems creeping below the surface. Herbacæ Borr.*

35. *S. herbacea* L. (*least W.*); leaves orbicular serrated glabrous shining veined, ovaries glabrous. *E. B. t. 1907.*

Snowdon and other Welsh mountains. Skiddaw. Plentiful upon the summits of all the Highland mountains. *h. 6.* — The least of our British species, though not so small as is generally supposed, for its stems divide and creep below the surface of the earth, scarcely rising an inch above. In the Botanic Garden of Edinburgh what was supposed to be this species acquired a prostrate woody stem, 2—3 feet long and nearly as thick as the little finger; but it more resembles the true *S. retusa*, and may not be of British origin.

xv. *Stamens mostly 2 and distinct. Anthers permanently yellow. Ovaries glabrous, lanceolate, acuminate. Style elongated, bifid. Stigmas entire or bifid. Catkins appearing before the leaves, sessile, terminal and lateral, large, obtuse, with very shaggy and silky scales. Leaves broadly elliptical or roundish, large, glaucous beneath; stipules large on the autumnal shoots. Shrubs 1—6 feet high, with numerous irregular crooked branches and hairy young shoots. Hastatæ Borr. \**

36. *S. \*hastata* L. (*Apple-leaved W.*); leaves broadly elliptical waved thin and crackling quite glabrous usually serrulate, stipules heart-shaped serrated about as long as the petiole,

catkins clothed with silvery hairs, ovaries distinctly stalked. *S. malifolia* Sm.: *E. B. t.* 1617.

Sands of Barrie, near Dundee, Scotland. Norfolk? *h.* 5.— It is most improbable that this plant, which is truly alpine on the Continent, growing in Switzerland only at great elevations, should be even naturalized upon the sands of Barrie, where Drummond met with it: the Norfolk station is entirely hypothetical, and equally unlikely. *Stem* usually 1—2 feet high when growing on the Alps, sometimes however rising to the height of 6 feet, as in our gardens. Remarkable for its broadly elliptical, shortly acuminate glabrous leaves, large stipules and very shaggy compact catkins, about 1½ inch long. Wahlenberg, Seringe, and Mr. Borrer unite in considering *S. malifolia* Sm. as only a state of *S. hastata* L., with a more attenuated base to the leaf; the first of these indeed says (*Fl. Lapp.* p. 268.) that all forms of the leaf, between roundish with a cordate base and lanceolate, may be observed on the same plant; and this is confirmed by Mr. Forbes, who received from Sir J. E. Smith plants of *S. malifolia*, and found that the leaves of their vigorous shoots became cordate.

37. *S. lanata* L. (*woolly broad-leaved W.*); leaves broadly oval pointed entire shaggy, stipules oval pointed entire, barren catkins clothed with yellow silky hairs, ovaries almost quite sessile. *E. B. S. t.* 2624. *S. chrysantha* *Fl. Dan.* t. 1057. *S. caprea* *Fl. Dan.* t. 245.

Scottish mountains, rare. Glen Dole. Whitewater, Canlochan, and Glen Callater, all in the Clova mountains, Angusshire. Meal-Uachdar, 8 m. W. of Killin; *W. Gourlie*, Esq., 1841. *h.* 5, 6.—About 2 (or when cultivated 3) feet high, with large pale-grayish shaggy foliage, and catkins that may be reckoned among the handsomest of the genus. This species Wahlenberg considers the most beautiful in Sweden, if not in the whole world. "The splendid golden catkins," he justly observes, "at the ends of the young branches, light up, as it were, the whole shrub, and are accompanied by the tender foliage, sparkling with gold and silver." *Style* never cloven to the base, as it is incorrectly represented in *Fl. Dan.* t. 1057: the stigmas are usually entire, but are sometimes cloven on the same specimen, so that *Fl. Dan.* t. 245, represents well some states of this plant. *Stamens* mostly 2, but occasionally 3; *filaments* quite distinct in our specimens, but we believe they have been sometimes observed more or less combined. *Stipules* towards the extremity of the autumnal shoots often longer than the petiole, but lower down sometimes not half as long. We have doubts if *S. lanata* of G. Don belongs to this species; in our specimen received from him neither flower nor leaves are sufficiently developed, but we incline to refer it to *S. arenaria*.

## 2. *PÓPULUS* Linn. Poplar.

*Scales* of the catkins usually jagged, very rarely quite entire. *Perianth* cup-shaped, oblique, entire, surrounding the stamens and pistil; nectariferous glands 0.—*Barren fl.* *Stamens* 4—30.—*Fertile fl.* *Stigmas* 2, bipartite or 3—4-cleft. *Caps.* 2-



celled by the introflexion of the edge of the valves, loculicidal.— Name: *populus*, or the *tree of the people*, for such it was esteemed to be in the time of the Romans.<sup>1</sup>

\* *Scales of catkins hairy or silky. Catkins in fruit dense. Stamens 4—8. Stigmas with narrow divisions. Leuce.*

1. *P. \*álba* L. (*great white P.*, or *Abele*); leaf-buds downy not viscous, leaves roundish-cordate lobed toothed glabrous and shining above downy and very white beneath, old ones sometimes glabrous, fertile catkins while flowering more slender than the barren ones, scales entire or incise only at the apex, those of the barren flowers woolly of the fertile ones thinly hairy, stigmas (yellow) bipartite their segments linear. *E. B. t.* 1618.

Moist and mountain woods. *h.* 3, 4.— A large *tree*, with smooth bark and spreading branches, of very rapid growth. Old leaves sometimes quite glabrous on both sides. *Scales* of the fertile catkins caducous. It is impossible to say where this species, now so much cultivated, is truly indigenous, or if it have any pretensions to be a native of this country. The late Dr. Graham informed us that it never flowered about Edinburgh, indicating that it was a much more southern plant. The *wood* is white and soft and only used for coarse work. All the British species have the young branches and shoots cylindrical.

2. *P. \*canéscens* Sm. (*gray P.*); leaf-buds downy not viscous, leaves roundish deeply waved toothed hoary and downy beneath, old ones sometimes glabrous, fertile catkins as large as the barren ones, scales of both deeply palmatifid and sericeo-pilose, stigmas (purple) cuneate irregularly 3—4-lobed. *E. B. t.* 1619.

Wet turfy meadows and dry heaths, scarcely indigenous. Frequent in Norfolk (*Sm.*). *h.* 3, 4.— *Tree* tall and handsome, of slower growth than the preceding and producing better *wood*. Usually confounded with the last species on account of its downy leaves, and those of the young shoots from the root being often also palmately 3—5-lobed: Dr. Bromfield thinks it a variety: M. Spach, however, considers it in reality much nearer the next, from which it is only to be distinguished with certainty by the leaf-buds and the leaves of the root-shoots, which in *P. tremula* are never palmate.

3. *P. trémula* L. (*trembling P.*, or *Aspen*); leaf-buds glabrous shining slightly viscous, leaves nearly orbicular and bluntly sinuate-toothed soon glabrous on both sides, fertile catkins as large as the barren ones, scales of both deeply palmatifid and sericeo-pilose, stigmas (purple) cuneate irregularly 3—4-lobed. *E. B. t.* 1909.

<sup>1</sup> In the whole of this genus, a transverse section of a branch exhibits the pith of nearly a regular pentagonal form: an approach to the same may also be observed in *Salix*.

Moist woods. Frequent in Scotland, even at a considerable elevation on the mountains. *h.* 3, 4. — The tree is well known by the tremulous movement of its leaves with the slightest breath of wind, which is aided by their stalks being much and laterally compressed; a character however to be observed in most other species. The figure in *E. Bot.* and Smith's description are not taken from the usual form of the stigmas, although they may be occasionally divided as represented, the auricle being one of the lobes. This species alone, of all those which are reputed British, "occurs in the middle of our large woods remote from the inclosed country."—*Bromf.*

\*\* Scales of catkins glabrous, ciliated at the apex. Catkins in fruit lax, moniliform. Stam. 8–30. Stigmas reniform or roundish, crenated, sometimes 2-lobed at the apex. Aigeiros.

4. *P. nigra* L. (*black P.*); leaf-buds glabrous viscous, leaves ovate deltoid or rhomboid cuspidate pointed crenate or serrated quite glabrous on both sides, stipules ovate acuminate, stigmas roundish 2-lobed at the apex. *E. B. t.* 1910 (not correct as to the stigmas).

Watery places and river-banks, scarcely indigenous. *h.* 4. — A very large tree of quick growth, producing a light not valuable wood. The well known *Italian Poplar*, or *P. fastigiata* Pers., appears to be a mere variety of the present, with erect, instead of spreading, branches.

## ORD. LXXXVI. CUPULIFERÆ Rich.

*Monœcious.*—*Barren fl.* amentaceous or in a lax spike. *Stamens* 5—20, inserted into the base of scales or of a membranous valvate perianth, generally distinct. — *Fertile fl.* aggregated or spicate or amentaceous. *Ovary* with several cells, crowned by the rudiments of a closely adherent perianth, seated within a coriaceous or somewhat leafy involucre (*cupule*) of various forms. *Ovules* in pairs or solitary, pendulous or peltate. *Stigmas* several, nearly sessile, distinct. *Fruit* a bony or coriaceous 1-celled nut (a *gland*), 1—3 together, more or less enclosed in the involucre. *Seed* solitary. *Albumen* wanting. *Embryo* large; *cotyledons* plano-convex; *radicle* minute, superior. — Trees or shrubs. Leaves *alternate*, *simple*, often with veins proceeding straight from the midrib to the margin.

\* *Barren flowers* in a globose catkin. *Anthers* 2-celled.

1. *FAGUS*. Fertile flowers 2 together within a 4-lobed prickly involucre. Stigmas 8, filiform.

\*\* *Barren flowers* in a long cylindrical catkin or spike.

† *Anthers* 2-celled.

2. *CASTANEA*. Fertile flowers 1—8 together within a 4-lobed mucated involucre. Stigmas usually 6 (6—8), filiform.

3. *QUERCUS*. Fertile flowers solitary within a cup-shaped scaly at length indurated involucre. Stigmas 3, oblong.

†† *Anthers* 1-celled.

4. *CORYLUS*. Fertile flowers aggregated in a short compact catkin. Involucre of one piece, at length enlarged leafy and laciniated, containing a single nut. Stigmas 2, filiform.
5. *CARPINUS*. Fertile flowers in a lax catkin. Involucre of 2 distinct at length enlarged leaves, containing 2 nuts. Stigmas 2, filiform.

### 1. *FÁGUS* Linn. Beech.

*Barren fl.* in a globose catkin. *Perianth* campanulate, 6-cleft. *Stam.* 8—15. *Anthers* 2-celled. — *Fertile fl.* 2 together within a 4-lobed involucre. *Perianth* urceolate, with 4—5 minute lobes. *Ovary* incorporated with the perianth, 3-celled, 2 becoming abortive. *Stigmas* 3, filiform. *Nuts* triquetrous, in pairs within the enlarged prickly involucre. — Name: *φάγος*, in Greek, from *φαγω*, to eat, on account of the nutritive qualities of the fruit.

1. *F. sylvatica* L. (*common B.*); leaves ovate glabrous obsoletely dentate their margins ciliated. *E. B.* t. 1846.

Woods, especially on a chalky soil. Scarcely wild in Scotland, but abundant in forests in the south of England. *h.* 5. — The wood is employed for an infinity of purposes by carpenters, turners, wheelwrights, &c. Swine are driven into the forests of *Beech* to feed upon the mast in Autumn.

### 2. *CASTÁNEA* Tourn. Chestnut.

*Barren fl.* in a very long cylindrical interrupted spike. *Perianth* single, of 1 leaf, 6-cleft. *Stam.* 8—20. *Anthers* 2-celled. — *Fertile fl.* usually 3 (1—3) within a 4-lobed involucre. *Perianth* single, urceolate, 5—6-lobed, having the rudiments of 5—12 *stam.* *Ovary* incorporated with the perianth, 3—8-celled, each cell 2-seeded, all the cells except one mostly abortive. *Stigmas* 3—8, filiform. *Nuts* 1—2 together within the enlarged prickly involucre. — Named from *Castanea*, in Thessaly, which produced magnificent Chestnut trees.

1. *C. \* vulgaris* Lam. (*Spanish C.*); leaves oblong-lanceolate acuminate mucronato-serrate glabrous on each side. *Fagus Castanea* L.: *E. B.* t. 886.

Woods in the S. and S.W. of England. *h.* 5—7. — This noble tree is much cultivated in plantations on account of its timber, of which Evelyn says, "It hath formerly built a good part of our ancient houses in the city of London," and that he had "one large barn near the city entirely framed of it." It affords excellent stakes for pallsades and props for vines and hops. It is good for mill-timber and for water-works; but if water touch the root of the growing tree, it spoils both the fruit and wood. The nuts are used as an article of daily food in

the S. of Europe, and in some parts of France they are served up for breakfast, boiled in milk.

### 3. QUERCUS Linn. Oak.

*Barren fl.* in a lax catkin or spike, without scales. *Perianth* single, 5—7-cleft. *Stamens* 5—10. *Anthers* 2-celled. — *Fertile fl.* aggregated or in a lax spike. *Involucre* 1-flowered, of many little scales united into a cup. *Perianth* single, closely investing the ovary, 6-toothed. *Ovary* 3—4-celled. *Style* short. *Stigmas* 3—4, oblong, compressed. *Nut* (or acorn) solitary, surrounded at the base by the enlarged cup-shaped indurated involucre. — Named, according to Lepelletier, from the Celtic *quer*, *beautiful*, and *cuez*, a *tree*, a term perhaps given to those few Oaks on which the Mistletoe was found; but the proper Celtic name was *derw*; hence *Darach*, Gaelic; *δρῦς*, in Greek, and *Dryades*, as well as *Druids*.

1. *Q. Robur* L. (*common British O.*); leaves deciduous oblong-ovovate deeply sinuate their lobes obtuse, fruits aggregated in the axils of the uppermost leaves or along an axillary stalk, involucre 3—4 times shorter than the mature nut its scales oblong obtuse closely imbricated. — *α.* fruits 2—6 in a long-stalked spike. *E. B. t.* 1342. *Q. pedunculata* W. — *β.* fruits aggregated or on a rather shortly stalked spike. *E. B. t.* 1845. *Q. Robur* W. *Q. intermedia* D. Don.

Woods and hedges, not uncommon, particularly in the Highlands of Scotland. *h.* 4, 5. — We can corroborate Dr. Greville's observations on these two supposed species (*Trans. Bot. Soc. Ed. i. p.* 65. *t.* 4, 5.): there is no connection whatever between the relative length of the fruit-stalk and the petiole; thus, although the long-stalked form is described to have much the shortest petiole, we have specimens before us from Killin with the upper petiole fully  $\frac{3}{4}$  inch long, while it is scarcely half an inch long in the usual form with aggregated fruits. The *flowers* are sessile upon the *peduncle* in both varieties; but in *β.* the peduncle is mostly very short, or almost wanting, in *α.* much elongated: between these there is every gradation: some specimens have no stalk whatever or a short one, the lowest fruit being usually at the base of the stalk; others exhibit this last and at the same time longer peduncles in which the lowest fruit is at a little distance from the base; in others we have the lower fruits still more distant from the base but below the middle of the stalk, till in some the lowest fruit is above the middle. In one specimen from Glen Falloch the peduncle with young fruits is  $7\frac{1}{2}$  inches long, the lowest fruit being 4 inches from the base, a strange contrast to the typical form of our *var. β.* but which is an extreme state, occurring, we believe, only at the extremity of the branches. *Q. intermedia* is said to have the lobes of the leaves separated by obtuse angles, and the *Q. Robur* and *Q. sessilifolia*, by acute angles; but both kinds may be observed on the same branch and sometimes on

the same leaf. It is generally supposed that the wood of one of the kinds is better than that of the others; but it is not agreed which supposed species is the more valuable; and it is very doubtful if the superiority of the timber corresponds either with the length of its petioles or peduncles, or shape of the leaves. The word *Robur* is derived from *rove*, another Celtic word for the oak; whence arises *robur*, strength, in Latin.

#### 4. *CORYLUS* Linn. Hasel-nut.

*Barren flowers* in a cylindrical *catkin*; its *scales* 3-cleft, middle lobe covering the two lateral ones. *Perianth* 0, except the two inner collateral scales of the catkin which cohere at their base to the outer one (or true scale). *Stam.* 3. *Anthers* 1-celled. — *Fertile fl.* 1—2 together within a minute involucre of 2—3 cohering lacerated hairy scales, the whole collected into a short gemmaceous bracteated *catkin*. *Perianth* closely investing the *ovary*, and scarcely distinguishable from it. *Stigmas* 2, filiform, *Nut* invested with the enlarged, united scales of the involucre, which are coriaceous at the base, and leafy and lacinated at the summit. — Named from *kops*, a *casque* or *cap*; the fruit, with its involucre, appearing as if covered with a bonnet.

1. *C. Avellána* L. (*common H.*); stipules oblong obtuse, leaves roundish-cordate pointed, involucre about the length of the fruit unarmed campanulate 2—3-partite rather spreading torn at the margin. *E.B.* t. 723.

Hedges and copses, abundant. *h.* 2—4. — The wood of hazel is employed for a number of domestic and agricultural purposes, and makes an excellent charcoal for drawing. The nuts are well known at our tables. The young forked twigs of this plant constitute the celebrated divining-rod (*virgula divinatoria*). From the Anglo-Saxons we have derived our word *Hasel-nut*, which they called *Hasel-nutu*, from *Hasel*, a *cap*, and *Knutu*, a *nut*.

#### 5. *CARPINUS* Linn. Hornbeam.

*Barren fl.* in a cylindrical *catkin*, its *scales* roundish. *Stam.* 5—12. *Anthers* 1-celled. — *Fertile fl.* in a lax *catkin*; its *scales* small, deciduous. *Involucre* of 2 distinct stalked leaves (*catkin-scales* Linn.), 2-flowered, at length large and foliaceous. *Perianth* urceolate, toothed at the apex, incorporated with the 2-celled *ovary*, of which one cell is abortive. *Stigmas* 2. *Nuts* in pairs, one attached to the summit of the stalk of each leaf of the involucre, ovate, striated. — Named from *car*, wood, and *pin*, a *head*, in Celtic; it having been the wood employed to make the yokes of oxen. The English "*Hornbeam*" has the same signification.

1. *C. Bétulus* L. (*common H.*); leaves of the involucre of the fruit deeply 3-lobed, central lobe oblong at least 2—3 times

longer than the lateral ones, serrated or entire, limb of the perianth with short somewhat ovate acute teeth, nut 7—11-striated. *E. B. t.* 2032.

In woods and hedges, in a meagre, damp, tenacious soil, forming a principal part of the ancient forests on the north and east sides of London. *h.* 5. — Rather a small tree, with ovate or subcordate doubly serrated acute leaves, of which the veins are somewhat hairy, and which are beautifully plaited when young. The wood of the Hornbeam is white, tough, and hard, and burns like a candle. It is used in turnery-work, for implements of husbandry, cogs of wheels, &c. The inner bark yields a yellow dye.

ORD. LXXXVII. CONIFERÆ *Juss.*  
(Including TAXINÆ *Rich.*)

Monœcious or diœcious, without a perianth. — *Barren flowers* in a deciduous catkin; scales peltate or erect, shortly stalked or sessile, bearing near the base at the edge, or on the under-side, 2 or more distinct anther-cells (2 or more monadelphous stamens each with a single 1-celled anther?). — *Fertile flowers* generally in many- or few-flowered cones, sometimes solitary. *Ovary*, in the cones, spread open, having the appearance of a dry or fleshy scale destitute of style or stigma, and arising from the axil of a membranous bractea; in the solitary flower sometimes apparently wanting or adhering to the ovule. *Ovules* naked, inverted or erect, with a large opening (foramen) at the summit. *Fruit* consisting either of a naked seed seated in a fleshy receptacle, or of a cone: the latter is formed of the scale-shaped ovaries which become enlarged and indurated or fleshy, and occasionally of the bracteas also, which are sometimes obliterated, and sometimes extend beyond the scales in the form of a lobed appendage. *Seeds* with a hard crustaceous integument. *Embryo* in the midst of a fleshy and oily albumen, with 2 or more opposite cotyledons; the radicle next the apex of the seed, and having an organic connection with the albumen. — *Resinous trees or shrubs, of vast importance, inhabitants of various parts of the world.* Wood in concentric layers, destitute of the large dotted ducts (bothrenchyma) so obvious in the Oak and other Dicotyledonous trees.<sup>1</sup> Leaves linear, aciculate or lanceolate, rigid, entire at the margins, or dilated and lobed, always with parallel

<sup>1</sup> The cells or fibres (parenchyma) of which the wood is composed, not being accompanied by vessels or ducts, are so pressed together that a transverse section exhibits under the microscope a kind of network, with square meshes formed by straight lines crossing each other at right angles, without any circular openings. The woody cells or fibres are moreover furnished on their side with curious gland-like disks, observable when a thin longitudinal slice is taken parallel to the medullary rays.

veins, sometimes fascicled and sheathing at the base. — From the pine, *Pinus*, we derive an immense quantity of useful timber, turpentine, pitch, &c.; *P. Larix* yields Venetian Turpentine; *P. Cedrus* is the Cedar of Lebanon. Gum Sandarach is supposed to be the product of *Thuja articulata*. The fruit of our common *Juniper* was formerly used to impart the peculiar flavour to gin. Cedar-pencils are not made of the real Cedar of Lebanon wood, but of an American *Juniper*, *J. Virginiana*.

1. *PINUS*. Fruit (dry) a many-flowered cone: scales closely imbricated, all dry. Seeds 2 on the inner face of each scale, crustaceous, winged at the end.
2. *JUNIPERUS*. Fruit (drupaceous) a small roundish few-flowered cone: scales closely imbricated, lower ones dry, empty; 3 upper fleshy, enclosing 1—3 bony wingless seeds.
3. *TAXUS*. Fruit (drupaceous) composed of a cup-shaped fleshy receptacle (with dry empty scales at its base), surrounding a single naked bony seed.

I. *Ovules inverted: foramen inferior. Pollen-grains oval, with darkly granular extremities and an intermediate transparent band; outer coat not ruptured readily by moisture. Abietinæ Br.*

### 1. *PINUS* Linn. Fir.

Monœcious.—*Barren fl.* in crowded racemose catkins; scales attached by the base, with 2 anther-cells. — *Fertile fl.* in an ovate or oblong many-flowered cone; its scales closely imbricated, dry, at length indurated: lowest ones empty, the others bearing two inverted ovules on the upper surface. Seeds 2 on each scale, crustaceous, terminated by a long winged appendage. — Name: *pin*, or *pen*, in Celtic means a head, or a prominent crag, or mountain, still so called in Wales (it is *Ben* in Scotland), where the pine delights to grow, “moored in the rifted rock.” — From the great diversity of forms in this genus, attempts have been made to subdivide it; but the only certain characters for the new genera depend on the scales of the cones, and on the form, position, and perennial nature of the leaves: we therefore retain it entire.

1. *P. sylvestris* L. (*Scotch F.*); leaves long and narrow rigid evergreen fascicled by pairs all round the branch, cones conic-ovate young ones stalked recurved as long as the leaves generally in pairs, scales with a small deciduous point below the summit where they are at length thickened, anther-scale shortly prolonged beyond the cells which open longitudinally. *E. B.* t. 2460.

Highlands of Scotland, where it constitutes vast natural forests.  
h. 5, 6. — A tree of great value, but only so when in a natural state

and in a congenial soil: it yields the red or yellow deal. A plank from the largest tree that was cut down in the late Duke of Gordon's forests at Glen More near the base of Cairngorm, measured  $5\frac{1}{2}$  ft. in diameter; and we observed in the same forest many stumps fully 3 ft. across. The bark has been used with much success in tanning, and in the north of Europe is made into a wretched substitute for bread. Tar, pitch, and turpentine are the produce of this tree; and in the Highlands, the resinous roots, dug up in the bogs, afford a succedaneum for candles. — Dr. Bromfield remarks that *P. sylvestris* and *P. Pinaster*, though not aborigines, are becoming established by spontaneous dissemination over the vast moorlands and bog-tracts of West Hants and Dorset, which they seem disposed to convert into pine-woods similar to those in the Highlands of Scotland, the Landes of Bordeaux, or the pine-barrens of N. America.

- II. *Ovules erect; foramen superior. Pollen-grains globose; the outer coat easily ruptured by moisture and cast off. Cupressinæ Br.*

### 2. JUNÍPERUS Linn. Juniper.

Mostly dioecious. — *Barren fl.* in minute *catkins*; scales subpeltate, with 4—8 *anther-cells* opening longitudinally. — *Fertile fl.* in a minute few-flowered cone; scales closely imbricated, lowest ones dry and empty, upper 3 bearing an erect *ovule* at their base on the upper surface. *Seeds* usually 3 (1—3), bony, wingless, enclosed within the 3 enlarged fleshy upper scales of the cone, resembling a *berry*. — Name: probably from the Celtic *uaine*, green, and *brior*, a *prickle*, on account of the evergreen prickly foliage.

1. *J. communis* L. (*common J.*); leaves 3 in a whorl linear mucronate spreading or imbricated longer than the berry. *E. B.* t. 1100. —  $\beta$ . *nana*; small, procumbent, leaves broader. *J. nana* Willd.: *E. B. S.* t. 2743.

Woods and heaths, frequent. —  $\beta$ . Abundant in the mountains of Wales, Scotland, and Ireland, and on low ground in the northern parts. *h. 5.* — A *shrub*, extremely variable in size, bearing numerous, linear, mucronate, and pungent leaves. *Flowers* axillary, small. The berries, which are bluish-black, used to form an important article of commerce in Holland, where they were employed in the manufacture of Geneva, imparting to it that peculiar flavour which our distillers now imitate by oil of turpentine. The wood is reddish, and serves for veneering.

### 3. TÁRUS Linn. Yew.

*Dioecious.* — *Barren fl.* in oval *catkins*, surrounded at the base with imbricated bractæ, of which the inner ones are larger; scales crowded, peltate, with 3—8 *anther-cells* on the lower



surface. — *Fertile fl.* a solitary erect ovule, seated on a fleshy disk, with a few imbricated scales at the base. *Seed* solitary, bony, contained in an open fleshy cup-shaped receptacle, resembling a *drupe*. — Name: *τοξον*, a bow, because the wood was excellent for that purpose: *τοξον* also means an arrow; perhaps arrows were poisoned with the juice of its berries.

1. *T. baccata* L. (common Y.); leaves 2-ranked crowded linear acute, flowers axillary sessile. *E. B.* t. 746.

Mountain woods. *h.* 3. — A low tree, with a trunk often of considerable diameter. The noble Yew, which still remains in Forthingal churchyard at the entrance to Glen Lyon, measures, according to Pennant, 56½ feet in circumference. The wood is hard, beautifully veined, much valued for cabinet-makers' work, and was formerly still more highly prized for making bows, on which account it is said to have been planted extensively by our ancestors in churchyards. *Leaves* distichous, linear, persistent, deep green. *Drupe*s red, esteemed poisonous. The Irish, or Florence-court Yew, now generally known in our gardens, has scattered leaves, and, as Dr. J. T. Mackay observes, a different habit from the common kind: it is *T. fastigiata* of Lindley, *T. baccata* β. Bab.: two of these were found among Juniper bushes on the mountains near Benoughlin (Lord Enniskillen's estate) about 80 or 100 years ago, by a tenant who brought one to Florence-court, planting the other in his own garden; from the tree brought to Florence-court all those now in existence originated: it is the pistillate plant, but it seems to bear fruit if a hedge of the staminate plants of the common kind be in the neighbourhood: the seeds, we understand, rarely yield the Irish form.

## CLASS II.

### MONOCOTYLEDONOUS<sup>1</sup>, OR ENDAGENOUS FLOWERING, PLANTS.

Cellular and vascular. *Stem* (when perennial) not increasing by a succession of annual layers on the outside of the old ones, usually with no distinction of bark, wood, pith, or medullary rays, but consisting of cellular tissue, in which the vascular is inserted in confused bundles, or

<sup>1</sup> From *μονος*, one or single, and *κωλυέειν*, a cotyledon.

in a single ring, the newest formation being internal. *Leaves* mostly alternate below, often sheathing permanent and withering on the stem, more rarely jointed and deciduous, with usually parallel nerves connected by simple transverse veins, rarely nettle-veined. *Flowers* with a single *perianth* (or without one), the parts mostly arranged in a ternary manner, sometimes when in a double row the external one green and resembling a calyx. *Embryo* with one *cotyledon*, or if apparently 2 they are alternate. *Plumule* and *radicle* either within the cotyledon, or lodged in a cleft in its side, or attached to its flat face.

SUB-CLASS I. PETALOIDEÆ. (ORD. LXXXVIII.—CV.)

*Flowers never glumaceous, sometimes naked or nearly so (as in Araceæ, Pistiaceæ, Naiadaceæ, and Juncaginaceæ), generally with a more or less coloured perianth, the pieces of which are in a single or double whorl.*<sup>1</sup>

CONSPECTUS OF THE ORDERS.

I. Ovary adnate with the tube of the perianth (inferior).

\* *Leaves with parallel nerves and simple transverse veins.*

- 89. ORCHIDACEÆ. Flowers perfect, gynandrous; stamens and style united.
- 88. HYDROCHARIDACEÆ. Stamens free from the style. Three outer segments of the perianth herbaceous. *Floating plants.*
- 90. IRIDACEÆ. Flowers perfect. Stamens 3, free from the style; anthers extrorse. Perianth wholly petaloid.
- 91. AMARYLLIDACEÆ. Flowers perfect. Stamens 6, free from the style; anthers introrse. Perianth wholly petaloid.

\*\* *Leaves with netted veins.*

- 92. DIOSCOREACEÆ. Stamens and pistils in separate flowers.

II. Ovary superior, free, not adnate with the perianth.

\* *Flowers perfect, containing both stamens and pistils, and with a perianth.*

† *Carpels and styles consolidated. Anthers introrse.*

- 94. LILIACEÆ. Perianth petaloid, conspicuous. Flowers scattered,

<sup>1</sup> Thus excluding the Grasses and Cyperaceous plants, where the stamens and pistil are covered by alternate imbricated membranaceous scales or bractes, hence glumaceous.

103. **ORONTIACEÆ.** Perianth herbaceous and scale-like. Flowers on a spadix. Fruit baccate.

97. **JUNCACEÆ.** Perianth usually dry and scarioso, sometimes herbaceous and petaloid, but becoming dry when withered. Flowers scattered. Fruit capsular.

†† *Carpels united or distinct. Styles distinct, or none and the stigmas distinct.*

† *Leaves reticulated with branching veins. Fruit succulent, many-seeded.*

93. **TRILLIACEÆ.** Leaves not articulated with the stem. Stem simple, 1-flowered. Flowers perfect. Outer 3 sepals or all herbaceous.<sup>1</sup>

†† *Leaves with parallel longitudinal nerves, connected by simple transverse veins.*

95. **MELANTHACEÆ.** Anthers extrorse. Cells of ovary and fruit many-seeded.—Terrestrial plants.

98. **BUTOMACEÆ.** Anthers introrse. Cells of ovary and fruit many-seeded.—Water plants.

99. **ALISMACEÆ.** Perianth conspicuous, 3 inner segments highly developed and petaloid. Cells of ovary and fruit 1—2-seeded.—Water plants.

100. **JUNCAGINACEÆ.** Perianth inconspicuous; all the sepals similar, herbaceous or scarcely petaloid. Lower flowers stalked. Cells of ovary and fruit 1—2-seeded.—Marsh plants, but neither submerged nor floating.

105. **NAIADACEÆ.** Perianth inconspicuous; sepals all scale-like, cuneate at the base. Flowers all sessile, on a common peduncle; cells of ovary and fruit 1-seeded.—Submerged or floating plants.

\*\* *Flowers imperfect (stamens and pistils in separate flowers) or without a perianth.*

105. **NAIADACEÆ.** Spadix thin or wanting. Spatha none or similar to the leaves. Perianth none. Carpels 1—4. — Submerged or floating plants.

104. **PISTIACEÆ.** Spadix none. Flowers naked, 2 enclosed in a membranous spatha. Carpels solitary, 1-celled. — Floating plants.

101. **TYPHACEÆ.** Flowers crowded on a thick spadix, which is not enveloped by a spatha.

102. **ARACEÆ.** Flowers naked, crowded on a thick spadix enclosed within a spatha.

96. **RESTIACEÆ.** Spadix none. Flowers bracteate, capitate. Ovary 2—3-celled, with solitary ovules. Fruit dry, capsular, loculicidal.

94. **LILIACEÆ.** Spadix none. Flowers solitary (on the middle of the leaf). Ovary 3-celled; cells with several ovules. Fruit succulent, indehiscent.—Shrubs.

99. **ALISMACEÆ.** Spadix and spatha none. Flowers stalked. Perianth conspicuous, 3 inner sepals petaloid. Carpels numerous, 1-celled.

<sup>1</sup> In the true *Smilacææ*, to which the *Sarsaparilla* belongs, the leaves are stalked and jointed with the stem, stem branched, many-flowered, flowers imperfect, sepals all petaloid, and the connectivum of the anthers is never prolonged beyond the cells. From the imperfect-flowered *Liliacææ* they principally differ by the structure of the leaves.

Div. I. *Ovary inferior, adnate with the tube of the perianth.*  
(ORD. LXXXVIII.—XCII.)

\* *Leaves with nerves from the base to the point of the leaf, connected by simple transverse veins.* (ORD. LXXXVIII.—XCI.)

ORD. LXXXVIII. HYDROCHARIDACEÆ Juss.

*Flowers* perfect or imperfect, with a *spatha*. *Limb* of the *perianth* usually 6-parted; the 3 inner segments petaloid, rarely wanting; 3 outer herbaceous (very rarely petaloid?). *Stamens* free from the style. *Ovary* solitary, 1- (or spuriously 3—9-) celled; *placentas* parietal, sometimes projected into the axis and meeting there. *Style* 1 or none. *Stigmas* 3—9, entire or bifid. *Fruit* coriaceous or fleshy, indehiscent, 1—9-celled. *Albumen* 0. *Embryo* straight. *Radicle* pointing to the hilum. — *Aquatics*. *Leaves* radical, with usually a sharply serrated margin, often floating, rarely rigid and submerged. *Flowers* whitish.

1. ANACHARIS. *Ovary* 1-celled. *Stigmas* 3. *Leaves* verticillate.
2. HYDROCHARIS. *Ovary* 6-celled. *Stigmas* 6, cuneate, bifid. *Flowers* 6—9-androus.
3. STRATIOTES. *Ovary* 6-celled. *Stigmas* 6, linear, bifid. *Flowers* polyandrous.

1. ANÁCHARIS Rich. *Anacharis.*

*Dioecious*. *Spatha* tubular, bifid at the apex, nearly sessile, containing a single flower. — *Barren fl.* *Perianth* 6-partite. *Stam.* 9. — *Fertile fl.* *Tube* of the *perianth* filiform, elongated; *limb* 6-partite. *Sterile stamens* 3, subulate. *Style* filiform, cohering with the tube of the *perianth*. *Stigmas* 3. *Fruit* baccate, 1-celled, few-seeded. — *Leaves* verticillate or opposite, sessile. — *Name*: *ava*, *like*, and *χapis*, an abbreviation of the name of the next genus.

1. *A. Alsinástrum* Bab. (*long-flowered A.*); *leaves* 3—4 in a verticil, linear- or oval-oblong minutely serrulate, *spatha* of the fertile flower many times longer than the ovary, *stigmas* ligulate. *Bab. in Ann. Nat. Hist. Ser. 2. i. p. 83. t. 8. A. Nuttallii* Planch. *Udora Canadensis* Nutt.

*Ponds, ditches, canals, and streams.* Leigh Park, near Havant, Hants; reservoirs at Watford and Foxton Locks on the Junction canal, Leicestershire; River Leen, and adjoining meadows, near Nottingham; in the Trent and canal near Burton on Trent, Staffordshire. In the Whitcadder, Berwickshire, from Bluestaneford to

Gainslaw (a distance of nearly 12 miles); Pond in the Edinburgh Botanic Garden (not planted there). Dublin. 4. 7—10.—The fertile plant has alone, so far as we know, been found in this country, a circumstance which favours the opinion that it must have been accidentally introduced; although we find it impossible to explain how it made its appearance in so many localities, and in the greatest abundance, much about the same time. It was originally discovered by Dr. Johnston of Berwick, in 1841. All the stations in the centre of England may possibly be connected with each other, but cannot be with the Berwickshire one; the other localities are subject to suspicion. The *stigmas* are usually 3, although 2 were observed by Mr. Babington; Mr. Kirk finds 3, but only 2 sterile *stamens*; these are occasional aberrations, there being 3 of each, unless when an accidental abortion has taken place. The stigmas are only emarginate in the British plant, but have a longitudinal line indicating a tendency to be bifid after being fertilized. The American species does not differ from ours; and we fear that if due allowance were made for the effects of climate and other accidental causes, all the reputed species of the genus ought to be conjoined; indeed *Udora* (or *Apalanthe*), *Anacharis*, and *Hydrilla*, appear each to contain merely a single species of the respective genera.

## 2. *HYDROCHARIS* Linn. Frog-bit.

Diœcious. — *Barren fl.* *Spatha* 2-leaved, shortly stalked, about 2—3-flowered. *Perianth* 6-partite. *Stam.* 6—12, in about 3 rows, connected at the base, surrounding 3 imperfect *styles*. — *Fertile fl.* on a long stalk, within the radical 1-leaved *spatha*. Tube of the *perianth* scarcely longer than the ovary; *limb* 6-cleft. Sterile *stamens* 6. *Stigmas* 6, oblong-cuneate, bifid, the segments divaricating. *Fruit* coriaceous, roundish, 6-celled, many-seeded. — *Leaves stalked, reniform*. — Named from *ὑδωρ*, *water*, and *χαρις*, *elegance*, being showy aquatic plants.

### 1. *H. Morsus Rânæ* L. (common Frog-bit.) *E. B.* t. 808.

Ditches and ponds in England and Ireland. Not wild in Scotland. 4. 7, 8. — Floating, and sending down long *radicles* from its horizontal *stems*. *Leaves* petioled, reniform, entire. *Flowers* subumbellate, large, white, delicate, arising from pellucid membranous *spathas*.

## 3. *STRATIOTES* Linn. Water-Soldier.

Diœcious. *Spatha* 2-leaved, stalked. — *Barren fl.* numerous in the *spatha*. *Perianth* 6-parted. *Stam.* 12—13, surrounded by 23—24 imperfect linear ligulate ones. — *Fertile fl.* solitary in each *spatha*. Tube of the *perianth* not longer than the ovary; *limb* 6-parted. Sterile *stamens* numerous. *Stigmas* 6, linear, bifid. *Fruit* baccate, 6-celled, many-seeded. — *Leaves sessile*,

*radical, crowded, narrow.* — Name: *σπατιωτης*, a soldier, from *σπατος*, an army; on account of the numerous sword-like leaves.

1. *S. aloides* L. (*Water-Soldier*); leaves sword-shaped triangular aculeate-serrate. *E. B. t.* 379.

Lakes and ditches, particularly common in the fenny parts of Norfolk and Lincolnshire. Rare in the north: planted in the Lochs of Duddingston, Forfar, and Cluny, Scotland. *fl.* 7. — A singular plant, with numerous *radical leaves*, thrown up from creeping *runners*, which penetrate far into the mud. *Scape* 4—6 inches long, compressed, 2-edged. *Flowers* white, from a compressed 2-leaved *spatha*. The *flowers* are dioecious, but sometimes the *stamens* on the fertile flower become perfect.

### ORD. LXXXIX. ORCHIDACEÆ.

*Perianth* of 6 segments in 2 rows, mostly coloured; one, the lowest (so situated from the twisting of the ovary) usually differing in form from the rest and often spurred. *Stamens* 3, united with the style in a central column, the two lateral ones usually abortive, sometimes the central one (in *Cypripedium*). *Anther* often deciduous, 2—4—8-celled. *Pollen* powdery or frequently cohering in waxy masses. *Ovary* 1-celled, with 3 parietal receptacles. *Style* forming part of the column with the *stamens*. *Stigma* a viscid space in front of the column. *Capsule* (rarely a berry) 3-valved. *Seeds* numerous; *testa* loose, reticulated. *Albumen* 0. — Herbaceous plants, the *terrestrial species* having often knob-like roots. *Many tropical species* are *epiphytes*. *Flowers generally handsome, in spikes or racemes.* — The tubers of several species afford *Salep*. The fragrant *Vanilla* is the seed-vessel of *Vanilla aromatica*.

I. *Anther* 1, terminal. *Pollen-masses* smooth (not granular): pollen cohering firmly in a definite number of simple lobes, each of which is a pollen-mass, and finally waxy (or rarely pulverulent when bruised in water).

1. **MALAXIS.** Outer sepals widely spreading. Lip quite entire and similar to the other inner sepals. Spur 0. Anther opening longitudinally. Pollen-masses 4, in a double row. Germen-stalk twisted.
2. **LIPARIS.** Outer sepals widely spreading. Lip quite entire, larger than the other linear inner sepals. Spur 0. Anther opening longitudinally. Pollen-masses 4, in a single row. Germen-stalk twisted.
3. **CORALLORHIZA.** Sepals converging. Lip with two small lobes at the base. Spur free or adnate to the ovary. Anther opening transversely. Germen and its stalk straight.

II. *Anther 1. Pollen-masses granular, consisting of granules in a very lax state of cohesion.*

4. *EPIPACTIS*. Perianth connivent or spreading. Lip free from the column and not embracing it, much contracted or articulated in the middle; upper lobe entire at the apex, lower concave.
5. *LISTERA*. Lip linear or oblong, 2-lobed at the apex.
6. *NEOTTIA*. Perianth ringent; the 2 lateral outer sepals erect, placed under and including the base of the lip, oblique at the base and more or less decurrent on the ovary. Lip beardless, canaliculate, embracing the column and cohering below with its produced base, with two callosities below the middle, entire at the apex.
7. *GOODYERA*. Perianth ringent; the 2 lateral outer sepals spreading, placed under and including the gibbous base of the lip. Lip entire at the apex, free from the column, flat above and without callosities.

III. *Anther 1, adnate to the face of the stigma. Pollen-masses granular: pollen cohering in an indefinite number of finally waxy granules or lobes, attached by an irregular elastic cellular tissue along the axis of the pollen-mass.*

8. *ORCHIS*. Lip spurred. Glands of the stalks of the pollen-masses contained in a common little pouch.
9. *GYMNADENIA*. Lip spurred. Anther-cells contiguous, parallel. Glands of the stalks of the pollen-masses naked, approximated.
10. *HABENARIA*. Lip spurred. Anther-cells separated, diverging at the base. Glands of the stalks of the pollen-masses naked, distant.
11. *ACERAS*. Lip without a spur. Glands of the stalks of the pollen-masses contained in a common little pouch.
12. *HERMINIUM*. Lip without a spur. Glands of the stalks of the pollen-masses naked, distinct.
13. *OPHRYS*. Lip without a spur. Glands of the stalks of the pollen-masses each in a distinct little pouch.

IV. *Anthers 2, lateral, with a central one sterile and petaloid.*

14. *CYPRIPEDIUM*. Lip large, inflated.

I. *Anther 1. Pollen cohering firmly in a definite number of simple smooth (not granular or pulverulent) lobes, each of which is a pollen-mass and finally becomes waxy (or rarely pulverulent when bruised in water).*

1. *MALAXIS* Sw. Bog-Orchis.

Outer *sepals* widely spreading. Lip without a spur, very small, superior, undivided: 2 lateral *petals* reflexed, smaller than the *calyx-leaves* and the lip. Column very short. Anther opening longitudinally. Pollen-masses in 2 pairs, placed the one behind the other.—Germen-stalk *twisted*.—Name: *μαλαξίς*, a *softening*, from *μαλασσω*, to *soften*, on account of the tender nature of the plant.

1. *M. paludosa* Sw. (*Bog-Orchis*); leaves 4—5 oval very concave papillose at the extremity<sup>1</sup>, lip concave acute. *E. B.* t. 72. Ophrys *L.*

Spongy bogs, in many places, but often overlooked on account of its small size. Frequent in the valleys of Clova. *Pl.* 7—9. — *Stem* 2—4 inches high. *Flowers* erect, minute, in a small greenish *spike*. *Calyx* of 3 ovate, horizontally spreading *leaves*, two of them erect, their bases embracing the base of the upper *lip*, which is thus also erect. Two lateral *petals* recurved.

## 2. LIPARIS Rich. Liparis.

*Perianth* spreading, uniform, with linear segments. *Lip* inferior, undivided, reflexed. *Column* elongated. *Pollen-masses* in 2 pairs. — Named from λιπαρός, *fat*, or unctuous to the touch.

1. *L. Loeselii* Rich.<sup>2</sup> (*two-leaved Liparis*); leaves 2 broadly lanceolate, scape trigonal, lip entire longer than the perianth. *Malaxis* Sw. Ophrys *L.*: *E. B.* t. 47. *Sturmia Loeselii Reich.*

Sandy bogs, in Norfolk, Suffolk, and Cambridgeshire. *Pl.* 7. — *Stem* 6—8 inches high. *Flowers* few, in a lax *spike*, yellowish-green: their general structure is very similar to the tropical and parasitical *L. foliosa*, Bot. Mag. t. 2709.

## 3. CORALLORHIZA Hall. Coral-root.

Outer *sepals* converging. *Lip* produced at the base; its *spur* adnate with the ovary, or free. *Column* free. *Anther* opening transversely, 2-lipped. *Pollen-masses* 4, oblique, not parallel. — Ovary and its stalk straight. — Name: κοράλλιον, *coral*, and ρίζα, *a root*; from the curious structure of the root.

1. *C. innata* Br. (*spurless C.*); spur very short adnate. Ophrys Corallorhiza *L.*: *E. B.* t. 1547.

Marshy woods, and more rarely in sand, in several parts of Scotland. *Pl.* 7. — *Root* of thick, interwoven, fleshy fibres. *Stem* 6—12 inches high, greenish-white, with 2—3 lanceolate, acute, sheathing *scales*, rather than *leaves*. *Flowers* 6—8, in a short lax *spike*, pale yellowish-green. Outer *sepals* linear-lanceolate, keeled, spreading; 2 lateral inner ones shorter, erecto-connivent. *Lip* oblong, white, nearly entire, waved at the margin, with a few purple blotches, deflexed. *Column* elongated. This genus holds a middle place between this section and the next. Mr. Brown considers the pollen-masses to be truly pulverulent, — Dr. Lindley asserts that although less waxy than in the preceding genera, they are really so, and only show a pulverulent structure when bruised among water.

<sup>1</sup> These papillæ the Rev. Professor Henslow has clearly ascertained to be little bulbous *gemmæ*, and has described and figured them as such in the *Mag. of Nat. Hist.* vol. i. p. 442; a fact suspected previously by ourselves in 1819, and in 1824 by Mr. W. Wilson, who further finds an *hybernaculum* formed in the autumn among the decayed leaves. Thus, independent of *seeds*, this curious little plant has one mode of perpetuating itself, and another of increase.



II. Anther 1. Pollen-masses consisting of granules in a very lax state of cohesion.

4. EPIPACTIS Br. Helleborine.

Lip free from the column, much contracted or articulated in the middle: lower lobe very concave, upper one entire at the apex. Pollen farinaceous. — Name given to some kind of *Hellebore* by the Greeks.

\* Upper segment of the lip with 2 projecting tubercles or plates at its base above. Column short. Anther sessile. Ovary straight, on a twisted stalk.

1. *E. latifolia* Sw. (*broad-leaved H.*)  $\frac{3}{4}$  leaves oblong or ovate many-nerved, upper ones narrower, raceme elongated many-flowered, lower bracteas longer than the flowers, upper lobe of the lip broadly ovate or deltoid acute somewhat cordate at the base broadest below the middle with 2 tubercles at the base as long as or a little shorter than the sepals nearly quite entire. —  $\alpha$ . leaves broadly ovate upper ones ovate-oblong, upper lobe of the lip roundish broader than long shorter than the broadly ovate sepals. *Serapias E. B. t.* 269. —  $\beta$ . leaves ovate-oblong, upper ones lanceolate, upper lobe of the lip reniform broader than long as long as the ovate acute sepals. *E. ovalis Bab. : E. B. S. t.* 2884. —  $\gamma$ . leaves ovate-oblong, upper ones lanceolate, upper lobe of the lip triangular longer than broad shorter than the ovate-lanceolate sepals (bracteas mostly all longer than the flowers). *E. purpurata Sm. : E. B. S. t.* 2275. —  $\delta$ . leaves ovate-oblong, upper ones lanceolate, upper lobe of the lip triangular longer than broad as long as the lanceolate sepals. *E. media Fries : Bab. Man.*

Woods in mountainous countries, not unfrequent. —  $\beta$ . Giggleswick and other places on the sides of mountains near Settle, Yorkshire. —  $\gamma$ . Woburn Abbey; Reigate, Surrey; Crawley, Sussex. —  $\delta$ . Salop, Matlock; Abberly, Warwickshire. 4. 7, 8. — Root creeping, with long fibres. Stem 1—3 ft. high; lower leaves varying much in breadth, the upper ones always narrower. Flowers in a very long lax raceme, greenish-purple, varying much in intensity, sometimes nearly green, sometimes all dark purple. We can perceive no essential difference in these varieties, between which there are intermediate forms: the shape and size of the lip, although variable, as well as its structure, distinguish this species from the next, which are the only two European ones of this section we are able to recognize.

2. *E. palustris* Sw. (*Marsh H.*); leaves lanceolate, bracteas mostly shorter than the slightly drooping flowers, upper lobe of the lip roundish-oval or obovate broadest at or above the middle undulate-crenate very obtuse or retuse with two crests at the

base longer than the sepals. *Serapias Scop.*: *E. B. t.* 270. *S. longifolia L.*

Moist and marshy places, especially in the vicinity of chalk. 4. 7. — *Stem* 1 foot high, purplish above. *Outer sepals* purple-green, inner ones and *lip* white, with rose-coloured streaks at the base.

\*\* *Upper lobe of the lip* naked, recurved. *Column* elongated. *Anther* on a short thick stalk. *Ovary* sessile, twisted. *Cephalanthera Rich.*

3. *E. grandiflora Sm.* (*large white H.*); leaves ovate-lanceolate sessile, bracteas longer than the glabrous ovary, sepals erect obtuse, upper lobe of the lip oval retuse shorter than the rest of the perianth, outer sepals obtuse. *E. pallens Sw.* *Serapias L.*: *E. B. t.* 271. *Cephalanthera Bab.*

Woods and thickets, chiefly in a chalky soil. 4. 5, 6. — *Stem* a foot or more high. *Flowers* remote, racemose; *sepals* all nearly equal, large, oblong-ovate, obtuse, cream-coloured, concave, including the small *lip* which is also white, but yellowish within. *Column* of fructification in this and the following species very long, in the preceding ones very short.

4. *E. ensifolia Sw.* (*narrow-leaved white H.*); leaves lanceolate much acuminate subdistichous, bracteas subulate much shorter than the glabrous ovary, sepals erect, outer ones acuminate, upper lobe of the lip roundish somewhat obtuse shorter than the rest of the perianth. *Serapias L.*: *E. B. t.* 494. *Cephalanthera Rich.*

Mountainous woods, but not general. 4. 5, 6. — “*Flowers* approximate, subsperate, pure white; outer *sepals* acute, acuminate, lip slightly pointed.” *Bromf.*

5. *E. rubra Sw.* (*purple H.*); leaves lanceolate, bracteas longer than the downy germen, perianth spreading, upper lobe of the lip acuminate as long as the inner sepals acuminate marked with raised wavy lines. *Serapias L.*: *E. B. t.* 437. *Cephalanthera Rich.*

Very rare in mountainous woods, in England. Bank sloping to the south on Hampton Common. Gloucestershire. 4. 6, 7. — *Sepals* purplish-red. *Lip* almost white.

### 5. *LISTERA* Br. Bird's-nest or Twayblade.

*Lip* 2-lobed at the apex. *Column* wingless. *Anther* fixed by its base. *Pollen* farinaceous Br. — Named in honour of *Dr. Martin Lister*, an eminent British naturalist.

\* *Column* very short. *Stem* with leaves.

1. *L. ovata Br.* (*common T.*); stem with only 2 ovate-elliptical opposite leaves, column of fructification with a crest in which the anther is placed. *Ophrys L.*: *E. B. t.* 1548.

Woods and moist pastures, frequent. 4. 5—7. — *Stem* 1 foot high. *Leaves* striated. *Flowers* distant upon the *spike*, yellowish-green. *Outer sepals* ovate; two lateral inner ones linear-oblong; *lip* long, bifid, without any teeth at the base. *Bractees* very short.

2. *L. cordata* Br. (*Heart-leaved T.*); stem with only 2 cordate opposite leaves, column without any crest, lip with a tooth on each side at the base. *Ophrys* L.: *E. B.* t. 358.

Sides of mountains in heathy spots, in the north of England and Scotland. 4. 6—8. — *Root* a few long fleshy fibres. *Stems* 3—5 inches high. *Flowers* few, very small, spiked, greenish-brown. *Sepals* somewhat spreading, *outer* ones ovate; lateral *inner* ones linear-oblong; *lip* pendent, linear.

\*\* *Column elongated. Stem with scales, without leaves.*

3. *L. Nidus-A'vis* Hook. (*common B.*); stem with sheathing scales leafless, column without any crest, lip linear-oblong with 2 spreading lobes, toothless at the base. *Ophrys* L.: *E. B.* t. 48. *Neottia* L.: *Rich.*

Shady woods in many parts of England and Scotland. 4. 5, 6. — *Root* of many, short, thick, densely aggregated, fleshy fibres. *Stem* 1 foot high. *Flowers* spiked, of a dingy brown. *Outer* and lateral *inner sepals* oblong-oval, nearly equal. Lobes of the *lip* spreading. — Dr. Lindley has shown that this can scarcely be generically distinguished from the group having leaves. It is the original *Neottia* of Dodonæus; Linnæus in 1740 adopted the genus, uniting with it *N. æstivalis*, but afterwards removed it to *Ophrys*. The unemployed name was then chosen by Jacquin, when he separated *N. æstivalis* and its more immediate allies: there cannot however be a doubt but that, had Jacquin's name not now been sanctioned by Swartz, Willdenow, Smith and Brown, the appellation ought to be given to *Listera*, or to that which contains the *Nidus-Avis*, the only one having the *neottious* root.

## 6. ΝΕΟΤΤΙΑ Jacq. Lady's Tresses.

*Perianth* ringent: the 2 lateral *outer sepals* erect, placed under and including the base of the lip, oblique at the base and more or less decurrent on the ovary. *Lip* beardless, campanulate, embracing the wingless *column* and cohering below with its produced base, with 2 callosities below the middle, entire at the apex. *Pollen* farinaceous. — *Flowers* in a spirally twisted *spike*. — Named from νεοττια, a bird's nest (See *Listera Nidus-avis*). It is the genus *Spiranthes* of Richard.

1. *N. spiralis* Rich. (*fragrant L.*); root-leaves oblong subpetiolate, spike twisted unilateral, lip oblong. *Ophrys* L.: *E. B.* t. 541. *Spiranthes autumnalis* Rich.

Dry hilly pastures in various parts of England, in a chalky or gravelly soil. 4. 8, 9. — *Tubers* 3—4, oblong. *Stem* 4—6 inches

high, rather bracteated than leafy. *Flowers* singularly spiral on the stalk, greenish-white. Upper *outer* and 2 lateral *inner sepals* combined. *Lip* longer than the rest of the flower, oblong, broader and crenate at the apex. *Stigma* and *anther* both acuminate.

2. *N. æstivâlis* L. (*Summer L.*); tubers cylindric long, radical leaves oblong-lanceolate, cauline narrowly lanceolate, spike lax twisted. *Bab. in E. B. S. t.* 2817. *Spiranthes æstivalis* Rich.

Bogs and marshes. Between Lyndhurst and Christchurch in the New Forest, Hants. St. Ouen's Pond, Jersey. *Æ.* 7, 8.

3. *N. cernua* Willd. (*drooping L.*); tubers long cylindrical, radical leaves linear-lanceolate, cauline ones triangular-lanceolate, bracteas glabrous shorter than the flower, spike dense 3-ranked, sepals equal obtuse cohering together, lip oblong slightly constricted in the middle upper segment obtuse crenulate. *Bab. N. gemmipara Sm. : E. B. S. t.* 2786 (bad). *Spiranthes cernua* Rich. : *Bab. in Linn. Soc. Trans.* xix. p. 262. t. 32.

Dunbog, Bear-Haven, Co. Cork, Ireland. *Æ.* 8, 9. — Stoutier and shorter than our American specimens, but perhaps not a distinct species. The reader will find a full account of it by Mr. Babington, in the Linnean Transactions above referred to.

## 7. GOODYERA Br. Goodyera.

*Perianth* ringent: the 2 lateral outer *sepals* placed under and including the gibbous base of the lip. *Lip* entire at the apex, free from the column, flat above and without callosities. *Pollen* angled. — Named in compliment to Mr. John Goodyer, a Hampshire botanist of the time of Gerard.

1. *G. répens* Br. (*creeping G.*); lower leaves ovate petiolate, calyx-leaves petals and lip ovate-lanceolate, root creeping. *Satyrion L. : E. B. t.* 289.

Old fir forests in the north, and especially the N. Highlands of Scotland. *Æ.* 8. — *Leaves* mostly radical. *Stem* a span high, bearing bracteiform leaves. *Flowers* small, white. *Column* very short. *Pollen-masses* broadly oval, composed of large granules, eventually fixed to the top of the *stigma* and falling away with a gland-like portion of it.



III. *Anther* 1, adnate to the face of the *stigma*. *Pollen-masses* granular: pollen cohering in an indefinite number of finally waxy granules or lobes, attached by an irregular elastic cellular tissue along the axis of the pollen-mass.

## 8. O'RHIS Linn. Orchis.

*Lip* spurred. *Glands* of the stalks of the *pollen-masses* con-

tained in a common little pouch. — Name: *ορχις*, an ancient appellation of plants with a double tuberous root.

\* *Stalks of the pollen-masses each with a distinct gland.*

† *Knobs<sup>1</sup> of the root 2, undivided.*

‡ *Bracteas 1-nerved.*

1. *O. Múrio* L. (*green-winged Meadow O.*); lip 3-lobed somewhat crenate the middle lobe emarginate, sepals obtuse ascending connivent, spur ascending blunt rather shorter than the germen. *E. B.* t. 2059.

Meadows and pastures, England. *ϑ.* 6. — *Stem* from 1 span to 1 foot high. *Flowers* few, in a lax *spike*. *Outer sepals* purplish green, forming a sort of helmet over the rest of the flower. *Lip* purple, pale in the middle, with purple spots.

2. *O. máscula* (*early purple O.*); lip 3-lobed somewhat crenate the middle lobe emarginate, outer sepals acute, the two lateral ones reflexed upwards, lateral inner sepals converging, spur obtuse rather longer than the germen. *E. B.* t. 631.

Woods and pastures, frequent. *ϑ.* 4—6. — *Stem* 1 foot high. *Leaves* generally marked with dark purple spots. *Flowers* in a lax oblong *spike*, purple, sometimes fragrant; the centre of the *lip* is whitish at the base and spotted, sometimes altogether white.

3. *O. ustuláta* L. (*dwarf dark-winged O.*); lip 3-partite marked with discoloured raised spots, segments narrow the middle one bifid, outer sepals connivent acute including the two lateral inner ones, spur nearly half as long, and bracteas as long, as the germen. *E. B.* t. 18.

Dry chalky pastures, in England. *ϑ.* 3, 6. — *Stem* 4—5 inches high. *Lip* white, with purple, raised, not rough spots, while the rest of the flower is a dark dingy purple. *Outer sepals* forming a sharp helmet-like covering, within which are the two small linear lateral inner ones. *Leaves* lanceolate, acute.

4. *O. fúscá* Jacq. (*great brown-winged O.*); lip deeply 3-lobed with raised rough dark points, lateral lobes linear-oblong, intermediate one large obcordate crenate and emarginate with a point in the sinus, outer sepals rather obtuse connivent including the two inner ones, spur obtuse about half as long as the germen. *O. militaris* *E. B.* t. 16.

Chalky pastures and borders of woods, in Kent. *ϑ.* 5. — *Stem* 1—2 feet high. *Leaves* ovate-oblong, obtuse. *Flowers* forming a handsome *spike*, with variegated purple *petals*; the *helmet* of a dark greenish-purple, the *lip* much paler.

<sup>1</sup> *Knobs* or *tubercles* are simple roots which become succulent. In this Order they are often called *tubers*, by mistake; for a true *tuber* is not a root, but "a roundish underground succulent stem covered with buds (or eyes), from which new plants or tubers are produced, — as the Potato." *Lindl.*

5. *O. militaris* L. (*Military O.*); lip deeply 3-lobed with small raised rough points, the two lateral lobes linear-oblong several-veined short, middle lobe dilated at the extremity and deeply emarginate with an intermediate point, outer sepals acuminate connivent including the 2 lateral inner ones, spur obtuse about half as long as the germen, bracteas very short. *Bicheno in E. B. S. t. 2675.*

Chalky hills, principally about Reading, on both sides of the Thames. 4. 5. — Intermediate, in the construction of its *flowers*, between the preceding and the following, but most allied to the former. *Helmet* pale ash-coloured. *Lip* deep purple, white in the middle. *Leaves* oblong, rather acute.

6. *O. tephrosanthos* Vill. (*Monkey O.*); lip 3-partite with small raised rough points the two lateral lobes linear 1-veined, intermediate one deeply bifid with a point in the sinus, outer sepals acuminate connivent including the two lateral inner ones, spur half as long as the germen, bracteas very small. *O. macra Lindl. O. militaris* β. *E. B. t. 1873 ?*

Chalk-hills in Berks, Oxfordshire and Kent. 4. 5. — This beautiful and curious sp. Dr. Lindley pronounces to be quite distinct from *O. tephrosanthos*, with which it had been confounded; but Mr. Borrer not only doubts its being so, but whether it be even distinct from *O. militaris*, from which it chiefly differs by the narrower and less veined lateral lobes of the *lip*. *Flowers* pale purple, spotted. Segments of the *lip* narrow, deep purple. Among specimens communicated by Mr. Bicheno, were some monstrous flowers, each having 2 opposite horizontal *lips*, 2 *spurs* and only 2 opposite *outer sepals*.

†† *Bracteas with 3 or more nerves.*

7. *O. laxiflora* Lam. (*lax-flowered O.*); lip 3-lobed the lateral lobes rounded in front crenulated longer than the truncated slightly emarginate intermediate one, spur cylindrical emarginate much shorter than the germen, lateral outer sepals reflexed, middle one erect, lateral inner ones connivent. *Bab. in E. B. S. t. 2828.*

Wet meadows and bogs, Jersey and Guernsey: Mr. Babington. 4. 5, 6. — "Allied to *O. Morio*, but that plant has single-nerved bracteas, and all the segments of its perianth, except the lip, are connivent. The short spur is also a valuable distinctive character." *Bab.*

†† *Knobs 2, palmate. Bracteas with 3 or more nerves.*

8. *O. latifolia* L. (*Marsh O.*); lip indistinctly 3-lobed its sides slightly reflexed crenate, outer sepals patent, 2 lateral inner ones connivent, spur cylindrical shorter than the germen, bracteas as long as or longer than the flower. *E. B. t. 2308.*

Marshes and moist meadows, common. 4. 6, 7. — *Stem* hollow. *Flowers* varying from pale rose-colour to deep purple, the *lip* dotted and marked with purple lines; *white* on the sands of Barrie, near

Dundee. The species is known by its slightly lobed *lip*, its broad, nearly erect, and acuminate *leaves*, and by the *bracteas*, which are leafy and longer than the *germen*.

9. *O. maculata* L. (*spotted palmate O.*); *lip* plane 3-lobed sometimes obscurely so, outer sepals spreading, 2 lateral inner ones connivent, spur cylindrical shorter, and *bracteas* usually not longer, than the ovary. *E. B.* t. 632.

Pastures and heaths, frequent. 4. 6, 7.—A foot high, slender. *Stem* usually solid. *Leaves* distant, spotted with purple. *Flowers* white or pale purple, more or less spotted or streaked, especially the *lip*. Its generally deeply lobed *lip*, having the lateral lobes rounded, central one rather the longest and ovate, together with the usually small subulate *bracteas*, constitute the chief marks of distinction between the usual form of this and *O. latifolia*. But the *bracteas* certainly do vary much in length, although they are seldom so long and leafy as in the last species; indeed, among more than a hundred specimens examined last summer in the west of Scotland, all of which had the *lip* pale, flat, and distinctly 3-lobed, as represented in *E. B.* t. 632, not one had the *bracteas* subulate; in scarcely any were they shorter than the *germen*, while in some they were much longer than the flower: all intermediate states from the stem solid to fistulose were likewise observed. We must either then depend solely on the *lip*, or on the *bracteas*, as a distinguishing character, the one not always corresponding with the other, or unite the two species.

\*\* *Stalks of the pollen-masses connected by a common gland. Knobs undivided.*

† *Lip erect in aestivation.*

10. *O. pyramidalis* L. (*pyramidal O.*); *lip* with 3 equal entire lobes and 2 protuberances at the base above, lobes oblong-truncate, middle lobe sometimes emarginate, outer sepals spreading acuminate, spur subulate-filiform longer than the *germen*, *bracteas* 3-nerved. *E. B.* t. 110.—*Anacamptis Rich.*

Pastures and waste ground, England, chiefly in a chalky or clayey soil. Mull of Galloway (in a sand-bank), Isle of Colonsay, and Fifeshire, Scotland. 4. 6—8.—*Leaves* very acuminate. *Flowers* of a delicate rose-purple, sometimes white, spirally arranged in a close, broad, and ovate *spike*.

†† *Lip spirally twisted in aestivation.*

11. *O. hircina* Scop. (*Lizard O.*); *lip* 3-partite waved at the base downy, segments linear, intermediate one twisted very long, outer sepals connivent including the small lateral linear ones, spur very short. *Satyrium* L.: *E. B.* t. 24. *Loroglossum Rich.* *Himantoglossum Spr.*

Chalk-hills and bushy places, in Kent and Surrey, very rare (perhaps now extinct). 4. 7.—A most remarkable plant, which cannot be confounded with any other. The smell of its *flowers* is

detestable, and similar to that of a goat, whence its Latin specific name. *Lip* purple towards the extremity, white and spotted towards the base; middle segment narrow and more than an inch long.

### 9. GYMNAÐÉNIA Br. *Gymnadenia*.

*Lip* spurred. *Anther-cells* contiguous. *Glands* of the stalks of the *pollen-masses* naked, approximated.—Named from γυμνός, *naked*, and ἀήνη, a *gland*; one of the essential characters of this genus.

#### 1. *G. conópsea* Br. (*fragrant G.*). *Orchis* L.: *E. B.* t. 10.

Dry pastures and heaths, in mountainous or hilly countries, especially in Scotland, most abundant, scenting the atmosphere with its fragrance. 4. 6—8.—*Stem* 1 foot high. *Knobs of the root* palmate. *Leaves* linear-lanceolate, keeled. *Flowers* in an ovate-oblong, rather dense *spike*, rose-purple. *Lip* 3-lobed, not spotted, the lobes equal, entire, rounded: the 2 lateral *outer sepals* spreading, their margins revolute; 2 lateral *inner* ones connivent. *Spur* filiform, twice as long as the *germen*. The 2 *cells* of the *anthers* are perforated at the base, through which the naked, large, and oblong *glands* of the stalks of the *pollen-masses* appear.—This genus is near the following in character, but it differs in habit.

### 10. HABENÁRIA Br. *Habenaria*. Butterfly-orchis.

*Lip* spurred. *Anther-cells* separated, diverging at the base. *Glands* of the stalks of the *pollen-masses* naked, distant.—Named from *habena*, a *thong* or *strap*, which the spur sometimes resembles.

\* *Spur* ~~very~~ short. *Peristylus* Lindl.

1. *H. viridis* Br. (*green H.*); spur very short 2-lobed, lip linear bifid with an intermediate tooth, anther-cells without any process between their bases, bracteas much longer than the flowers, tubers palmate. *Satyrion* L.: *E. B.* t. 94.

Dry hilly pastures, not unfrequent. 4. 6—8.—*Stem* 6—8 inches high; lower *leaves* nearly ovate, obtuse; *outer* and lateral *inner sepals* connivent and forming a helmet, green. *Lip* small, greenish-brown.

2. *H. alba* Br. (*small white H.*); spur obtuse much shorter than the germen, lip 3-cleft the segments acute, middle one the longest, anther-cells with a rostellate process between their bases, sepals all nearly equal ovate concave. *Satyrion* L.: *E. B.* t. 505. *Gymnadenia alba* Rich.

Mountain pastures, not unfrequent. 4. 6—8.—About a span high. *Leaves* oblong, striated, lower ones obtuse. *Flowers* white, small, fragrant. *Lip* scarcely longer than the other *sepals*, deflexed.

\*\* *Spur* filiform, elongated. *Platanthera* Lindl.

3. *H. bifolia* Br. (*lesser B.*); inner sepals connivent obtuse,



spur twice as long as the germen, lip linear entire obtuse, anther oblong-truncate, its cells parallel. *E. B. S. t.* 2806. *Orchis L. Platanthera Lindl.*

Moist copses, meadows, and marshes, frequent. *4.* 6—8. — Radical *leaves* usually 2, oblong-obovate, and attenuated at the base, both in this species and the next; cauline ones small, lanceolate.

4. *H. chlorántha* Bab. (*great B.*); inner sepals connivent obtuse, spur twice as long as the germen, lip lanceolate entire obtuse, anther broadly ovate truncate, its cells converging upwards twice as widely separated at the base as at the apex. *Platanthera Lindl. Orchis bifolia E. B. t.* 22.

Dry pastures and heaths, sometimes in moist places, frequent. *4.* 6—8. — Although we have now admitted this as a species, we are not convinced that it is essentially distinct from the preceding. The two agree precisely in general appearance, and in every character save one, which in that case would require to indicate a different structure before it be held sufficient, the difference consisting merely in the anther of *H. chlorantha* being more dilated at the base, which may possibly be the effect of luxuriance. We only admit it because *H. bifolia* is itself in the same way intermediate between *H. chlorantha* and the genus *Gymnadenia*.

### 11. A'CERAS Br. Man-Orchis.

*Lip* without a spur. *Glands* of the stalks of the *pollen-masses* contained in a common little pouch. — Name: α, *without*, and κέρας, *a horn*; in allusion to the absence of a spur.

1. *A. anthropóphora* Br. (*green M.*); lip longer than the germen. *Ophrys L.: E. B. t.* 29.

Dry chalky or clayey pastures in Surrey, Kent, Norfolk, and Suffolk; Hildersham, Cambridgeshire. *4.* 6. — *Tubers* ovate. *Stem* about a foot high. *Flowers* in a long *spike*. *Lip* tripartite, with linear segments, yellowish, with a red or brown margin, the middle lobe rather broad, deeply bifid. *Helmet* green, composed of the 3 connivent, concave outer *sepals*, including the 2 small, linear-lanceolate, obtuse, lateral inner ones.

### 12. IERMÍNIUM Br. Musk-Orchis.

*Lip* without a spur. *Glands* of the stalks of the *pollen-masses* naked, distinct. — Name, probably derived from ἔρμιν, ἔρμινος, the *knob* or *foot* of a *bed-post*, in allusion to the root.

1. *H. Monórchis* Br. (*green M.*); radical *leaves* 2 lanceolate. *Ophrys L.: E. B. t.* 71.

Chalky pastures, principally in the east and south-east of England. *4.* 6, 7. — *Tubers* 2, very unequal. *Plant* 4—6 inches high, slender, with two lanceolate-oblong *leaves* at the base, and a small one on the *stem* or *scupe*. *Flowers* small, green. *Perianth* bent down from the

top of the erect *germen*. Outer *sepals* equal, ovate, shorter than the inner ones, lateral inner ones ovate, acuminate, undivided; lower or *lip* 3-fid, the two side-lobes rather small, intermediate one much longer, linear. *Pollen-mass* on a short foot-stalk, with a large white gland.

### 13. O'PHRYS Linn. Ophrys.

*Lip* without a spur. *Glands* of the stalks of the *pollen-masses* each in a distinct little pouch.—Name: *ὄφρυς*, the *eyebrow*, which Pliny says this plant was used to blacken. The flowers of all the species are beautiful and curious, and more or less aptly resemble certain insects.

1. *O. apifera* Huds. (*Bee O.*); *lip* tumid trifid, the intermediate lobe recurved at the margin emarginate with a long subulate reflexed appendage in the notch, rather elongated with a hooked point, inner *sepals* oblong bluntish downy. *E. B.* t. 383. *O. insectifera* L.

Chalky and clayey soils in various parts of England, in pastures and pits. *h.* 6, 7.—*Flowers* large. Outer *sepals* purplish or greenish-white, lateral inner ones oblong, very small, of the same colour. *Lip* velvety or silky, rich brown variegated with yellow.

2. *O. arachnites* Willd. (*late Spider O.*); *lip* longer than the calyx dilated somewhat tumid with 4 shallow marginal lobes and a terminal flattened somewhat heart-shaped straight or ascending appendage, outer *sepals* coloured, inner ones deltoid downy, anther with a straight or hooked point. *E. B. S.* t. 2596.

Chalky downs of South Kent, between Folkstone and Sittingbourne. *4.* 5, 6.—The Rev. G. E. Smith speaks of this as allied to *O. apifera*, with which, and probably *O. fucifera*, it forms frequent hybrids. The essential distinctions are to be sought in the position of the appendage at the extremity of the lower *lip*, which is straight (and never recurved); in the more or less deltoid form of the purplish or green inner *sepals*; in the more bent and short, as well as paler, outer ones; and in the proportion borne to them by the *lip*, which is either equal or longer, and which presents in the true plant a nearly entire margin, and a more obvious shade of green in the various lines and spots upon its dull or intensely brown disk.

3. *O. arunifera* Huds. (*Spider O.*); *lip* tumid clothed with short dense hairs emarginate entire or obscurely lobed, middle lobe large without an appendage or with a mere gland or point in the notch, inner *sepals* linear, rather acute.—*α.* *lip* lobed, inner *sepals* glabrous. *E. B.* t. 65.—*β.* *lip* undivided with a spreading wavy margin, inner *sepals* scabrous. *O. fucifera* Sm.: *E. B. S.* t. 2649.

Chalky and clayey pastures and pits.—*β.* Kent. *4.* 4, 5.—*Lip* shorter and broader than in *O. apifera*; its colour deep brown, with paler lines not unfrequently resembling the Greek letter  $\pi$ . Outer

sepals green. Mr. G. E. Smith is now satisfied that *O. fucifera* is only a var. of the present.

4. *O. muscifera* Huds. (*Fly O.*); lip oblong 3-fid middle segment larger 2-lobed, lateral inner sepals filiform, anther short obtuse. *E. B.* t. 64.

Chalky and clayey pastures in England; abundant in many parts of Norfolk, Suffolk, Surrey, and Kent. 4. 5—7. — Well distinguished from all the preceding by its very slender, lateral inner sepals, which resemble the antennæ of an insect, and by its narrow lip, 2 lobed at the extremity, and having a broad pale bluish spot in its centre.

IV. Fertile anthers 2, lateral, with a central one sterile and petaloid.

#### 14. CYPRIPÉDIUM Linn. Lady's Slipper.

Lip large, inflated. Column with a large terminal, dilated lobe (or sterile stamen) separating the 2 anthers. Two lateral or lower outer sepals often combined. — Named from *Κυpris*, *Venus*, and *ποδιον*, a sock or slipper; i. e. *Venus's slipper*.

1. *C. Calceolus* L. (*common Lady's Slipper*); stem leafy, terminal lobe of the column nearly oval, lip shorter than the calyx somewhat laterally compressed. *E. B.* t. 1.

Woods in the north of England, very rare (almost extinct). 4. 5. — One of the most beautiful and interesting of our native plants.

### ORD. XC. IRIDACEÆ.

Limb of the perianth 6-cleft, or 6-partite, sometimes irregular. Stamens 3; inserted into the base of the outer segments. Filaments sometimes united. Anthers fixed by their base, opening outwards. Ovary 3-celled, many-seeded. Style 1. Stigmas 3, or 1 with 3 divisions, often petaloid or 2-lipped. Capsule 3-celled, 3-valved; valves bearing the dissepiments in the middle. Seeds round, hard. Albumen horny or firmly fleshy. Embryo with the same direction as the seed. — Herbs, rarely undershrubs. Leaves equitant (except in *Crocus*). Flowers spathaceous, sometimes partly subterranean. — *Orris*-root is from *Iris Florentina*.

1. *IRIS*. Perianth 6-cleft; alternate segments longer and reflexed. Stigmas 3, petaloid, covering the stamens.
- 1a. *SISYRHYNCIUM*. Perianth 6-cleft; segments nearly equal, patent; tube scarcely longer than the limb. Stigma 3-partite, segments filiform. Stamens monadelphous.
2. *TRICHONEMA*. Perianth 6-cleft; segments equal; tube shorter than the limb. Stigma tripartite, segments deeply bifid, slender. Stamens distinct.

3. *Crocus*. Perianth 6-cleft; segments equal; tube very long (much longer than the limb). Stigma trifid or 3-partite, segments widening upwards. Stamens distinct.

1. *Iris* Linn. Iris or Flower de Luce.

Perianth 6-cleft, each alternate segment longer and reflexed. Stigmas 3, petaloid, covering the stamens. — Named from *Iris*, the rainbow, on account of the beautiful and varied colours of its flowers.

1. *I. Pseud-ácorus* L. (*yellow Water I.* or *Corn-flag*); leaves sword-shaped, perianth beardless its inner segments smaller than the stigmas. *E. B. t.* 578.

Watery places, wet meadows and in woods, frequent. *4.* 5—8. — *Flowers* large, deep or rarely pale yellow (*Bot. Mag. t.* 2239). *Root* large, horizontal, very acrid. A piece of it held between the teeth is said to cure the tooth-ache, and is otherwise used medicinally, also for giving a black dye, and making ink. The roasted seeds are recommended as a substitute for coffee.

2. *I. foetidissima* L. (*stinking I.*); leaves sword-shaped, perianth beardless its inner segments spreading about as large as the stigmas, stem one-angled. — *α.* flowers purple. *E. B. t.* 596. — *β.* flowers yellow.

Woods, thickets and pastures; frequent in the southern and western parts of England, rare in the middle and northern counties: not known in a wild state in Scotland. — *β.* About Swanage near Corfe Castle, Dorsetshire; Hants. *4.* 6, 7. — *Flowers* much smaller than the last, dull livid purple, or in *β.* yellow. The leaves, when bruised, emit a very disagreeable odour, which some have, however, compared to roast-beef, whence its common English name, *Roast-beef plant*. In Devonshire it is so frequent, that one can hardly avoid walking among it when herborizing, and being annoyed by the smell.

(*Iris tuberosa* L.: *E. Bot. Suppl. t.* 2818, is a native of the Levant and other countries bordering on the Mediterranean, formerly cultivated for its medicinal properties, and cannot be admitted into our flora. Mr. Borrer has seen the plant in two of Mr. Penwick's five stations, and assures us that "they are very near farm-houses." For the same reason we scarcely deem *I. Xiphium*, *I. xiphioides*, *I. pumila*, or *I. Germanica* worthy of notice, although all have been reported "indigenous." — Nor can we admit *Sisyrinchium anceps*, which is a well known N. American plant,—indeed the genus is not European,—it has been found near Woodford, Loughrea, Galway, Ireland, by Mr. Lynam.)

2. *TRICHONÉMA* Ker. *Trichonema*.

Perianth single, petaloid, in 6 deep equal segments, tube shorter than the limb. Stam. 3. Filaments hairy. Stigma bipartite, slender. Seeds globose. — Named from *τριχ*, *τριχος*, a hair, and *νημα*, a filament.

1. *T. Columnæ* Reich. (*Columna's T.*); scape single-flowered mostly solitary slightly drooping, leaves filiform compressed furrowed flexuose, spathas longer than the tube of the corolla, style shorter than the stamens, stigmas bifid at the apex. *Romulea Mauri* Fl. Rom. p. 18. *Trichonema* Bulbocodium Sm. *Ixia Bulbocodium* E. B. t. 2549 (not of Linn.?)

Grassy pastures in Guernsey and Jersey. The Warren, Dawlish.  
 2. 3, 4. — A small bulbous plant, with pale bluish-purple and yellow flowers. *Mauri* appears to have well distinguished the two European species of this genus.

### 3. *Crocus* Linn. *Crocus*.

*Perianth* single, coloured; *tube* very long; *limb* cut into 6 equal segments. *Stam.* 3, distinct. *Stigma* 3-parted or 3-cleft, segments widening upwards, plaited. — Named from *κροκη*, a *thread* or filament, from the appearance of the *saffron* of the shops, which consists of the dried stigmas of *Crocus sativus*. — (In all this Genus the germen is concealed under-ground, elevated by a short peduncle from the root, which peduncle elongates, after the decay of the flower, and the capsules appear above-ground.)

\* *Flowers in spring, along with the leaves.*

† *Scapes enveloped in a tubular sheath.*

1. \**C. vernus* Willd. (*purple Spring C.*); stigma within the flower erect cut into 3 jagged wedge-shaped lobes, bulb clothed with slender anastomosing fibres. E. B. t. 344. *C. sativus* β. L.

Meadows and fields. Plentiful about Nottingham. 2. 3.

†† *Scapes naked.*

2. \**C. minimus* Red. (*least purple C.*); spatha double, stigmas erect longer than the stamens included in the solitary flower, leaves linear filiform, bulb with a membranous coat. *C. præcox* Haw. in E. B. S. t. 2645. *C. reticulatus* E. Fl. vol. iv. p. 262. (not Bieb.) *C. biflorus* Mill.?

In Sir H. Bunbury's park at Barton, Suffolk. 2. 3.

3. \**C. aureus* Sm. (*golden C.*); spatha simple, stamens longer than the stigma, segments of the corolla oblong incurvo-patent, bulb coated with compact fibres. E. B. S. t. 2646.

With the preceding, and equally the outcast of gardens. 2. 3. — This Mr. Borrer considers not specifically distinct from *C. marianus* Gawl. (*C. vernus* Curtis in Bot. May.)

\*\* *Flowers in autumn, before the leaves. Scapes enveloped in a tubular sheath.*

4. \**C. sativus* L. (*Saffron C.*); spatha double, stigma in three

deep linear divisions protruded drooping, bulb clothed with slender anastomosing fibres. *C. autumnalis* *E. B. t.* 343.

Meadows; as about Saffron Walden in Essex, where it is cultivated for the sake of its fragrant *stigmas*, which constitute *saffron*. 4. 9. — We fear this plant, far from being a native, is not even naturalized in this country.

5. \**C. nudiflorus* Sm. (*naked-flowering C.*); stigma within the flower erect in 3 deeply lacinated segments, bulb with a membranous coat. —  $\alpha$ . stigma equal in height with the anthers. *E. B. t.* 491. —  $\beta$ . stigma considerably longer than the anthers. *C. speciosus* Hook. (*M. Bieb.*?, not *Reich*): *E. B. S. t.* 2752.

$\alpha$ . Between Nottingham Castle and the Trent in a large meadow called the Siddals, on the banks of the Derwent, near the Derby Railway Station. —  $\beta$ . Meadows near Warwick, Warrington, and about Halifax. 4. 9, 10,

## ORD. XCI. AMARYLLIDACEÆ R. Brown.

*Limb* of the *perianth* coloured, 6-partite or 6-cleft. *Stamens* 6, inserted at the bottom of the segments, sometimes united by a membrane. *Anthers* opening inwards. *Ovary* inferior, 3-celled; the *cells* many-seeded, or in those whose fruit is fleshy, 1—2-seeded. *Style* 1. *Stigma* 3-lobed. *Fruit* capsular; either dry with 3 valves bearing the dissepiments in the middle, 3 cells and many seeds; or fleshy with 1—3 seeds. *Integument* of the seed not crustaceous. *Embryo* straight, in the axis of a fleshy *albumen*, having the same direction as the seed. — Flowers large, generally of a bright colour. Leaves fleshy, indistinctly nerved, all radical. Roots bulbous.

1. NARCISSUS. Perianth tubular at the base, with a 6-partite limb, and a campanulate crown or nectary.
2. GALANTHUS. Perianth 6-partite, campanulate, 3 outer sepals spreading, 3 inner smaller, erect, emarginate; crown none.
3. LEUCOJUM. Perianth 6-partite, campanulate, sepals all equal and a little thickened at the point; crown none.

### 1. NARCISSUS Linn. Narcissus. Daffodil.

*Perianth* coloured, tubular at the base, with a spreading 6-partite limb, and a campanulate or cup-shaped crown or nectary, within which are the *stamens*. *Anthers* dehiscing longitudinally. *Flowers* from a *spatha*. — Named from *ναρκη*, *stupor*, in allusion to the powerful and injurious smell of the flowers. More immediately derivable from the youth *Narcissus*, who is fabled to have been changed into this plant, an inhabitant sometimes of watery places, by the banks of streams.

1. *N. Pseudo-narcissus* L. (*common D.*); spatha single-flowered, nectary campanulate erect crisped at the margin, obsoletely 6-cleft, as long as the ovate segments of the perianth. *E. B.* t. 17.

Moist woods and thickets, Rare in Scotland; about Culross and Dunoon, but scarcely indigenous. Near Templeogue, Ireland. 4. 3, 4. — *Flowers* large, yellow.

2. *N. \*poëticus* L. (*the Poet's N.*); spatha mostly single-flowered, nectary very short concave membranous and crenate at the margin, leaves with an obtuse keel. *E. B.* t. 275.

Heathy open fields on a sandy soil, said to be wild in Norfolk and Kent. 4. 5. — Larger than the last, with a *flower* of a very different structure, and a deeply coloured border to the *nectary*. Its beauty and delicious odour have recommended it to general culture. Smith says it is the true *Narcissus* of the Greek writers, and clearly described by Dioscorides.

3. *N. \*biflorus* Curt. (*pale N.*); spatha 2-flowered, nectary very short concave membranous and crenate at the margin, leaves acutely keeled. *E. B.* t. 276.

Sandy fields, Kent; near Totness, Devon; Hampshire, apparently quite wild. About Dublin, frequent. 4. 5, 6. — Similar to the last in the general form of the *flowers*, but they are smaller, not of so pure a white, without the coloured border to the nectary, and with a less agreeable scent.

(Besides the above, *N. conspicuus*, *incomparabilis*, *minor*, and *lobularis* have been all enumerated as "wild," or "naturalized," in England: none of them have however any right to a place in our Flora; and even two of those usually admitted, because they were sanctioned by Smith's authority and figured in *E. Bot.*, ought to be rejected.)

## 2. GALÁNTHUS Linn. Snowdrop.

*Perianth* campanulate, of 6 pieces, 3 outer ones spreading, 3 inner smaller, erect, emarginate. *Anthers* opening by a pore. *Seed* with a whitish skin. *Flowers* from a *spatha*. — Scape *solid*. — Named from γαλα, *milk*, and ανθος, a *flower*. The French name, *perce-neige*, is very expressive.

1. *G. \*nivālis* L. (*common S.*) *E. B.* t. 19.

Woods, orchards, meadows, pastures, &c., in very many places in England, Scotland, and Ireland. 4. 2, 3. — *Bulb* ovate. *Leaves* 2, broadly linear, glaucous-green. *Flowers* solitary, drooping, elegant, rendering this plant a general favourite.

## 3. LEUCÓJUM Linn. Snowflake.

*Perianth* campanulate, of 6 equal pieces, a little thickened at the point. *Anthers* opening by a slit near the apex. *Seed* with

a black and shining skin. *Flowers* from a *spatha*. — *Scape hollow*. — Named from λευκος, *white*, and ιω, a *violet*.

1. *L. \*æstivum* L. (*Summer S.*) ; *spatha* many-flowered, style club-shaped. *E. B. t.* 621.

Moist meadows ; Thames' side, below Greenwich, especially the Kentish shore ; in Suffolk, Berkshire, Westmoreland, Northumberland, &c. 2. 5. — *Root* bulbous. *Leaves* long, linear, keeled ; *scape* 2-edged. *Flowers* white, drooping.

**\*\* *Leaves with netted veins.* (Ord. XCII.)**

#### ORD. XCII. DIOSCOREACEÆ R. Brown.

Diœcious. Limb of the *perianth* with 6 divisions. — *Sterile fl.* *Stamens* 6 from the base of the *perianth*. — *Fertile fl.* *Ovary* 3-celled ; *cells* 1—2-seeded. *Style* deeply trifid. *Stigmas* undivided. *Fruit* dry and flat, with 2 of its cells frequently abortive, or (in *Tamus*) baccate. *Embryo* small, near the hilum, lying in a large cavity of cartilaginous *albumen*. — *Mostly twining and tropical shrubs.* *Leaves with reticulated veins.* *Flowers small, bracteated.* — *Dioscorea sativa* affords the well-known *Yam*.

##### 1. *TÁMUS* Linn. Black Bryony.

*Barren fl.* *Perianth* single, in 6 deep segments. — *Fertile fl.* *Perianth* single, superior, in 6 deep segments, contracted at the neck. *Stigmas* 3. *Berry* of 3 cells. — Name : supposed to be the *Uva Taminia* of Pliny, or *Black Bryony*.

1. *T. communis*, L. (*common B.*) ; leaves undivided cordate acute. *E. B. t.* 91.

Hedges and thickets, England. 2. 5—7. — *Root* very large, acrid, black externally, fleshy. *Stems* long, twining and reaching among trees and bushes to a great distance. *Flowers* greenish-white. *Berry* red.

**DIV. II. *Ovary superior, free, not adnate with the tube of the perianth.* (Ord. XCIII—CV.)**

**\* *Perianth conspicuous. Seeds with albumen.* (Ord. XCIII.—XCVII.)**

#### ORD. XCIII. TRILLIACEÆ De Cand.

*Flowers* perfect. *Sepals* 6—10 (rarely 4), outer ones herbaceous ; inner herbaceous or much larger and coloured rarely



wanting. *Stamens* 6—10. *Anthers* linear, the cells fixed one on each side near the middle or the apex of a subulate filament. *Ovary* free, 3—5-celled, with as many distinct styles. *Stigmas* inconspicuous. *Ovules* numerous, in 2 rows in each cell, ascending. *Fruit* succulent, 3—5-celled. *Seeds* numerous; the skin brownish, leathery. *Albumen* fleshy, with a minute embryo close to the hilum. — *Stems* simple, herbaceous. *Leaves sessile, verticillate, membranaceous, with netted veins, not articulated with the stem, marcescent.* *Flowers* large, terminal, solitary.

### 1. PÁRIS Linn. Herb-Paris.

*Perianth* of 8—10 narrow, very patent or reflexed sepals, inner ones scarcely coloured. *Cells* of the *anthers* fixed one on each side the middle of a subulate filament. *Berry* 4—5-celled. — Named, it is said, from *par, paris, (equal)*, on account of the regularity of its leaves and flowers.

1. *P. quadrifolia* L. (*common H.*); leaves ovate 4—5 in a whorl. *E. B. t. 7.*

Moist and wet shady woods, in many parts of England and Scotland. Killarney, Ireland. *4.* 5, 6. — *Stem* 1 ft. high, with 4, rarely 5, whorled, large, ovate, acute leaves at its summit, the rest leafless. *Flower* single, terminal, on a foot-stalk about 2 inches long. *Perianth* of 8 (rarely 10) sepals; outer ones linear-lanceolate, green; inner similar to these, but narrower and more yellow. *Roots* purgative. *Berry* esteemed poisonous; but it has been employed in curing inflammation in the eyes.

## ORD. XCIV. LILIACEÆ Juss.

*Flowers* perfect or very rarely imperfect. *Sepals* 6 (rarely 4) all petaloid, regular or nearly so, occasionally cohering at the base in a tube. *Stamens* 6 (rarely 3 or 4) inserted upon the sepals. *Anthers* opening inwards. *Ovary* free from the perianth, 3- (or rarely 2-) celled. *Style* 1, undivided. *Stigma* simple or 3- (or rarely 2-) lobed. *Fruit* succulent or dry and capsular, 3- (or rarely 2-) celled. *Seeds* usually placed one above another in 2 rows in each cell, sometimes in pairs or solitary. *Albumen* fleshy. — Herbs, shrubs, or trees, with bulbs or tubers or rhizomas or fibrous roots. *Leaves* with parallel veins or nerves, never articulated with the stem, mostly narrow. *Flowers* usually large and showy, sometimes small and greenish. — Many of the family contain a bitter juice. The root of *Scilla maritima* (or *Urginea Scilla*) affords the Squill of the shops. *Socotrine Aloes* are produced by *Aloe Socotrina*; *Barbadoes Aloes* by *A. perfoliata*. *New Zealand Flax* is the fibre from the leaves

of *Phormium tenax*. *Gum-Dragon* is the concrete juice of *Dracaena Draco*.\*

\* *Fruit a berry. Roots never bulbous. (Ovules 2 in each cell in British genera.) Asparagææ.*

1. *ASPARAGUS*. Perianth 6-partite, campanulate, deciduous. Stam. 6, distinct. Stigmas 3, reflexed. Flowers jointed with their pedicel.
2. *RUSCUS*. Perianth 6-partite, persistent. Stamens connected at the base. Style surrounded by a nectary (tube formed by the sterile stamens). Stigma capitate. Flowers imperfect.
3. *CONVALLARIA*. Perianth campanulate, 6-cleft, deciduous. Stamens 6, distinct. Stigma 1. Flowers perfect, not jointed with the pedicel.
4. *POLYGONATUM*. Perianth cylindrical, 6-cleft at the apex, scarcely deciduous. Stam. 6, distinct. Stigma 1. Flowers perfect, jointed with the pedicel.
- 4a. *MAIANTHEMUM*. Perianth 4-partite, spreading, deciduous. Stam. 4, diverging, inserted into the base of the segments. Anthers ovate. Flowers perfect, not jointed with the pedicel.

\*\* *Fruit dry, capsular. Roots never bulbous. Flowers jointed with their pedicel. Anthericææ.*

5. *SIMETHIS*. Flowers perfect. Perianth 6-partite, spreading, deciduous. Stam. 6; filaments bearded. Ovules 2 in each cell.

\*\*\* *Fruit dry, capsular. Root bulbous. Flowers usually on a leafless scape, and with membranaceous bractæas or spathas, but no true leaves at the base of the pedicels which are not jointed with the flower. Ovules numerous in each cell. Scilleæ.*

† *Sepals combined below or forming a campanulate perianth. Anthers attached to the filament by their back above the base.*

6. *AGRAPHIS*. Perianth 6-partite, tubular-campanulate, sepals reflexed at the extremity. Filaments longish, decurrent.
7. *MUSCARI*. Perianth globose or subcylindrical, contracted at the mouth, 6-toothed. Filaments very short.

†† *Sepals distinct, spreading. Anthers attached to the filament by their back.*

8. *ALLIUM*. Flowers umbellate, inclosed at first in a 1—2-leaved spatha.
9. *SCILLA*. Flowers blue or purple, racemose, on a scape. Spatha 0. Perianth deciduous.
10. *ORNITHOGALUM*. Flowers white, racemose or corymbose, on a scape. Spatha 0. Perianth persistent.

\*\*\*\* *Fruit dry, capsular. Root bulbous. Stem more or less leafy. Peduncles (& pedicels) without membranaceous bractæas at their base, springing from the axils of true leaves and not jointed with the flowers. Sepals distinct. Ovules many in each cell. Tulipeæ.*

† *Anthers erect.*

11. *GAGEA*. Flowers yellow, corymbose or umbellate. Sepals without a nectariferous fold or depression. Style conspicuous.

12. *LLOYDIA*. Flowers white tinged with red, solitary or few and corymbose. Sepals with a transverse nectariferous fold near the base. Style conspicuous.

13. *TULIPA*. Flowers usually solitary, rarely 2 on each stem. Style 0.

†† *Anthers attached above the base in front.*

14. *FRITILLARIA*. Sepals with a nectariferous depression at the base. Style 3-cleft at the apex.

14a. *LILIUM*. Sepals with a longitudinal nectariferous furrow at the base. Style undivided. Stigma capitate.

\* *Roots never bulbous. Fruit fleshy. Asparagæ. (Gen. 1—4.)*

### 1. *ASPARAGUS* Linn. *Asparagus*.

*Flowers* perfect or occasionally imperfect, jointed with the pedicel. *Perianth* campanulate, tubular at the base, 6-partite, deciduous. *Stamens* 6, distinct. *Anthers* peltate. *Ovary* 3-celled, with 2 ovules in each cell. *Stigmas* 3, reflexed. *Berry* globose, 3-celled. — Name: *ασπαργος*, in Greek, from *σπαρσσω*, to *tear*; many of the species being armed with spines.

1. *A. officinalis* L. (*common Asparagus*); unarmed, stem herbaceous mostly erect rounded very much branched, leaves setaceous fasciculate flexible, peduncles jointed in the middle. *E. B. t.* 339. —  $\beta$ . stem procumbent.

In several parts of the west and south-west coasts of England. On an island, thence called "*Asparagus Island*," Kynance Cove, Cornwall. Links near Gosford, Scotland. —  $\beta$ . south-west coast of Anglesea, rare: *Mr. W. Wilson*. 4. 6—8. — *Root* creeping, throwing up numerous scaly erect or rarely procumbent stems, which, when cultivated, are the *Asparagus* of our tables; rarely, in a wild state, exceeding a foot in height. *Flowers* drooping, greenish-white, often imperfect, with obsolete styles. *Berries* bright red.

### 2. *RÚSCUS* Linn. *Butcher's Broom*.

\* *Dioecious*. *Perianth* spreading, of 6 sepals. *Filaments* combined in a tube. — *Barren fl.* *Anthers* 3—6, reniform, placed on the summit of the stamen-tube. — *Fertile fl.* *Anthers* 0. *Style* 1, surrounded by the tube of the sterile stamens. *Stigma* capitate. *Ovary* 3-celled; *ovules* 2 collateral in each cell. *Berry* usually 1-seeded. — Name; anciently *bruscus*; from *bruskelen*, in Celtic, *box-holly*.

1. *R. aculeatus* L. (*common B.*); stem rigid branched, leaves ovate-acuminate very rigid and pungent bearing the solitary flower on their upper surface. *E. B. t.* 560.

Bushy and heathy places and woods, especially in a gravelly soil. Abundant in the south of England and Jersey. Bothwell woods; and Skeldon woods near Ayr; but not truly wild in Scotland. h.

3, 4.— *Flowers* minute, white, arising from the disk of the evergreen leaves. *Berry* red.

### 3. CONVALLARIA Linn. Lily of the Valley.

*Flowers* perfect, not jointed with the pedicel. *Perianth* deciduous, campanulate, 6-cleft, segments recurved. *Stamens* 6, distinct, inserted into the very base of the perianth. *Anthers* linear, pointed. *Ovary* 3-celled, with 2 superposed ovules in each cell. *Style* short, thick. *Stigma* 1, obtuse. *Berry* 3-celled, with 1 (or rarely 2) seeds in each cell. — *Flowers* racemose, with a membranaceous bractea at the base of the pedicels. — Name, — *convallis*, a valley; from the locality of this plant.

1. *C. majalis* L. (*sweet-scented* L.). *E. B. t.* 1035.

Woods and coppices, particularly in a light soil. Frequent in England, more rare, if indigenous, in Scotland. *℥.* 5—7. — *Leaves* 2, ovate-lanceolate, radical. *Scapes* semicylindrical. *Flowers* racemed, very pure white, fragrant, segments recurved. *Berries* red, globose.

### 4. POLYGONATUM Tournef. Solomon's Seal.

*Flowers* perfect, jointed with the pedicel. *Perianth* tardily deciduous, cylindrical, shortly 6-cleft at the summit, the lobes erect. *Stam.* 6, distinct, inserted upon the middle of the tube of the perianth. *Anthers* linear. *Ovary* 3-celled, with 2 superposed ovules in each cell. *Style* filiform. *Stigma* 1, obtuse. *Berry* 3-celled; cells 2- (or rarely 1-) seeded. — Peduncles or pedicels axillary, without membranaceous bracteas at the base. — Named from πολυς, many, and γωνυ, γωνιος, a knee or angle, on account of the angled stems.

1. *P. verticillatum* All. (*narrow-leaved* S.); leaves lanceolate whorled. *Convallaria* L.: *E. B. t.* 128.

Woods and glens, very rare, and only found in Scotland. Den of Rechip, 4 miles N.E. of Dunkeld. Blair in Athol; Blair Gowrie; and several other places in the same district. *℥.* 6. — *Stem* 2 ft. high. *Leaves* numerous, bright green, 3—4 in a whorl. *Flowers* solitary, or with branched footstalks, drooping. — We have been induced to adopt the present genus on account of its difference of habit and having so few characters in common with the last, the jointed pedicel being thought sufficient by some botanists to remove several genera of this Order into a different division from others.

2. *P. multiflorum* All. (*common* S.); leaves ovate-elliptical alternate half-embracing the rounded stem, peduncles one- or many-flowered, filaments hairy. *Convallaria* L.: *E. B. t.* 279.

Woods and coppices, in various parts of England and the south of Scotland: also at Kingusie, 7 miles from Aberdeen. *℥.* 5, 6. — *Stems* 2 ft. high, bare of leaves below. *Leaves* large, marked with

longitudinal nerves, secund; the *flowers* drooping in an opposite direction, white, greenish at the tips. *Berries* bluish-black.

3. *P. officinale* All. (*angular S.*); leaves ovate-elliptical alternate half-embracing the angular stem, peduncles mostly single-flowered, filaments glabrous. *Convallaria Polygonatum L.*: *E. B. t.* 280.

Woods in England, rare. Yorkshire; Somerset; Kent. *4.* 5—6. — Smaller than the last. *Flowers* greener, fragrant.

(*Maianthemum bifolium* DC. has two stations assigned to it in the N. of England in Gerard's Herbal, and more lately has been said to be found in Northumberland and Middlesex. We do not believe it to be indigenous, although it may be naturalized in one or two places.)

\*\* *Roots* never bulbous. *Fruit* dry, capsular. *Anthericæ*. (Gen. 5.)

#### 5. SIMÊTHIS Kunth. *Simethis*.

*Flowers* perfect, jointed with the pedicel. *Perianth* 6-partite, spreading, deciduous. *Stam.* 6, distinct. *Filaments* woolly upwards. *Anthers* oblong, emarginate. *Ovary* 3-celled, with 2 superposed *ovules* in each cell. *Style* filiform. *Stigma* entire. *Capsule* 3-celled; cells 2-seeded. — Named after the Sicilian Nymph *Simethis* or *Simæthis*. (See *Ovid Met.* xiii. 750.)

1. *S. bicolor* K. (*variegated S.*). *Kunth Enum.* iv. p. 618. *Anthericum Desf.* *Phalangium DC.* *Anthericum planifolium L.* *Phalangium Pers.*: *E. B. S. t.* 2952.

Barren heaths. In a plantation of firs (chiefly of *Pinus maritima*) on Poole heath, Dorsetshire, perhaps introduced with the trees from France. Derrynane, co. Kerry. *4.* 6. — *Root* a number of fleshy fibres. *Leaves* linear, flat, somewhat carinate and folded especially at the upper part. *Scape* and *leaves* embraced by sheathing scales. *Flowers* panicle, on long stalks; erect, white within, externally violet or purple at the summit and on the margin. *Pedicels* with a membranaceous bractea at their base. *Seeds* black and shining, attached to the axis of the capsule by short thick white stalks. — Although the specific name *planifolium* is the oldest, it is scarcely applicable, and we therefore adopt that which was retained for the plant when removed from the genera with which it had been associated.

\*\*\* *Root* bulbous. *Fruit* dry, capsular. *Flowers* usually on a leafless stem or scape and with membranaceous bracteas or spathas, but no true leaves, at the base of the pedicels which are not jointed with the flower. *Ovules* numerous in each cell of the ovary. *Seeds* with a black crustaceous shining coat. Scilless. (Gen. 6—10.)

#### 6. A'GRAPHIS Link. Blue-bell.

*Perianth* 6-partite; sepals connivent below and forming a

campanulate tube, somewhat connected at the base, recurved at the extremity. *Stamens* 6, inserted below the middle of the perianth, on which the filaments are decurrent; alternate ones longer and somewhat exserted. *Capsule* obtusely 3-angled, 3-celled, 3-valved at the apex, few-seeded. — Flowers *racemose*, with *membranaceous* bracteas at the base of the pedicels. — Named from α, *not*, and γραφω, to *write* or *mark*, these plants being supposed by some to be the flowers noticed by Virgil<sup>1</sup> whereon were inscribed the names of kings, but which now exhibit nothing resembling written characters; and also because the genus *Hyacinthus* was named after the youth Hyacinthus, who, being killed by Apollo, was by him changed into a plant, whose foliage bore in dark streaks the initials of his name: the *A. nutans* being placed by Linnæus in that genus, and having no mark or figure on the leaf, was hence called *H. non-scriptus*, which specific name is the same as *Agraphis*.

1. *A. nutans* Link (*wild Hyacinth* or *B.*); flowers in a raceme drooping, sepals revolute at the points, bracteas in pairs, leaves linear. *Scilla Sm.*: *E. B.* t. 377. *Hyacinthus non-scriptus L.*

Woods, copses, and hedge-rows; varying with white and more rarely rose-coloured flowers. 4. 4—6. — *Leaves* long, linear, channelled, acuminate. *Scape* 1 foot high, with 2 bracteas at the base of each short pedicel. — The habit of this plant is surely more that of *Hyac. orientalis* than of any true *Scilla*.

#### 7. MUSCÁRI Tourn. Grape-Hyacinth.

*Perianth* inferior, of 1 piece, globose or subcylindrical, contracted at the mouth, 6-toothed. *Filaments* very short, not decurrent on the perianth, inflated, 6-toothed. *Capsule* trigonous, with prominent angles; cells 2-seeded. — Flowers *racemose*. — Named from μύσχος, *musk*, a smell yielded by one species.

1. *M. \*racemósum* Mill. (*Starch G.*); flowers crowded ovate upper ones nearly sessile abortive, leaves linear flaccid keeled longer than the scape. *Hyacinthus L.*: *E. B.* t. 1931.

Grassy fields, &c. Sandy fields at Caversham, Suffolk, certainly indigenous: *Bromfield*. 4. 5. — *Flowers* deep blue, smelling like starch.

#### 8. A'LLIUM Linn. Onion. Leek. Garlic.

*Perianth* inferior, petaloid, of 6 ovate spreading pieces. *Caps.* triquetrous. Flowers *umbellate*, arising from a 2-leaved *spatha*. — Named from the Celtic *all*, which signifies *acid*, *burning*. (*Théis.*)

<sup>1</sup> "Dic quibus in terris inscripti nomina regum  
Nascuntur flores." — *Virg. Ecl.* iii. 106.

*Gladiolus communis* or *Fritillaria Meleagris* corresponds better to this description.

\* *Stem-leaves not fistulose (plane or keeled). Alternate filaments 3-pointed, middle point bearing the anther.*

1. *A. \*Ampeloprasum* L. (*flowering great round-headed G.*); umbels globose without bulbs, leaves linear keeled acuminate, stamens exserted, 3 alternate ones deeply 3-cleft, middle point as long as the entire part of the filament, spatha 1-leaved pointed. *E. B. t.* 1657.

Rare. On Holmes Island in the Severn; *Ray*:—the remains of ancient cultivation; *Borrer*. Great Arran Island, Galway Bay, Ireland; *Mr. W. Andrews*. 4. 8. — *Bulb* compound, of 2—4 divisions. *Stem* 2—3 ft. high, with broad acuminate leaves, and large heads of purplish-white flowers. Allied to *A. Porrum*, the leek, in habit, but differing in its perennial and clustered young bulbs. The specific name, *αμπελος*, a vine, and *πρασον*, a leek, means leek of the vineyard. *Porrum*, says *Théa*, is from *pori*, to eat, in Celtic; whence comes our word porridge.

2. *A. Babingtoni* Borr. (*bulbiferous great round-headed G.*); umbels globose with spherical (large) bulbs proliferous, stem leafy below, leaves linear acutely keeled, stamens exserted “incurved at the point when young,” 3 alternate ones 3-cleft, middle point rather shorter than the entire part of the filament, spatha 1—2-leaved long-pointed. *Borr. in E. B. S. t.* 2906. *A. Halleri Bab. Man.* ed. 1.

Rare. Grade and Ruan Minor, Cornwall (but only in or near orchards). Round Stone, Galway; and South Isles of Arran; Ireland. 4. 8. — This differs from the last almost solely by having most of the flowers converted into large bulbs, a character, which although employed to distinguish the species of this genus, indicates rather a disease than a distinct organism: all the other characters may be the effect of such metamorphosis. *Mr. W. Andrews* finds it growing with *A. Ampeloprasum* in Great Arran Island, and considers it only a variety. It is probably usually confounded on the Continent with the next. *Bulb* compound, of 2 divisions, with a few external yellow-brown stalked offsets from the crown of the root.

3. *A. Scorodoprásium* L. (*Sand G.*); umbels globose loose few-flowered with numerous spherical (small) bulbs, stem leafy below, leaves linear flat, sheaths 2-edged, stamens included or as long as the perianth, 3 alternate ones 3-cleft, middle point shorter than the lateral ones and the entire part of the filament, leaves of the spatha with a very short point. *E. B. S. t.* 2905. *A. arenarium* L.: *Sm.*: *E. B. t.* 1358 (as to the description, but not the figure).

Mountainous woods and fields, in sandy soil, principally in the N. of England and Scotland, but not common. Portmarnock sands, Ireland. 4. 7. — *Bulb* simple, with numerous stalked purple offsets. *Stem* 2—3 ft. high, leafy below, round, smooth, slender and wavy, yet firm and solid. *Spatha* usually single, scarious, short

and broad, with a short point. *Bulbs* of flowers not so large as a pea. *Flowers* mostly few, never so numerous as the bulbs, on stalks usually much longer than the bulbs. This is not the *Scorodoprasum* of old authors, that name being sometimes given to *A. Ampeloprasum*, and sometimes to a variety of the *Leek* or *A. Porrum*, nor even of some modern botanists, whose plant is a large form of *A. sativum*: *Borrer*.

\*\* *Stem-leaves* narrow, not fistulose (flat or keeled, or grooved above). *Filaments* all simple, connected at the base. *Spatha* 2-valved, one valve with a long point.

4. *S. oleráceum* L. (*streaked Field G.*); umbels lax bearing bulbs, stem leafy below, leaves linear grooved above semiterete or flat and ribbed beneath, stamens simple as long as or shorter than the perianth.—*a.* leaves thick semiterete and 4-ribbed beneath thinner towards the summit. *E. B.* t. 488.—*β.* leaves equally thick compressed and many-ribbed beneath. *A. carinatum* Sm. (not Linn.?): *E. B.* t. 1658.

Borders of fields in Essex, about Bristol; in Norfolk, Westmoreland, and Yorkshire.—*β.* Sandy ground on the south-east coast, and mountainous situations in the north of England. 4. 7.—*Stems* rounded, leafy below. *Flowers* upon long wavy peduncles, pale-brownish white. Smith considered his *A. carinatum* to differ only from *A. oleraceum* by the more compressed leaves: most authors now conjoin them. The true *A. carinatum* of Linnæus is said to be characterized by its exserted stamens.

\*\*\* *Leaves* fistulose. *Filaments* all simple, distinct.

5. *A. Schænóprasum* L. (*Chive G.*); umbels many-flowered globose without bulbs, stem naked or with one leaf rounded, leaves subulate-filiform fistulose rounded or grooved above, spatha of 2 ovate leaves, stamens simple about half the length of the perianth.—*a.* leaves and stem straight. *E. B.* t. 2441. *A. arenarium* *E. B.* t. 1358 (as to the figure).—*β.* leaves spreading curved, umbel drooping before the flowers expand. *A. Sibiricum* L.: *Borr. in E. B. S.* t. 2934.

Meadows and pastures, rare. Westmoreland, Berwickshire, and Argyleshire.—*β.* between Kynance Cove and Mullion, and at Tintagel, Cornwall. 4. 6, 7.—*Stem* 1 ft. high. *Heads of flowers* compact, purplish. *Stam.* simple. *Spatha* of two short ovate leaves. *Umbel* without bulbs.—Specific name from *σχοινος*, a rush, and *πρασον*, a leek: i.e. *rush-leaved onion*. We consider the figure of *A. arenarium* in *E. B.* to have been taken from this species, the leaf being erroneously represented. "The plant among the rocks at Kynance (at least that which I have seen in various places along the cliffs between Kynance Cove and Mullion) is *A. Sibiricum* Linn., differing, whether specifically or not, from *A. Schænoprasum* (the *chive* of our kitchen-gardens) by its larger size, less clustered bulbs, variously curved instead of upright leaves, and (under a glass) crenulate, instead of even, striæ of the stem and leaves, peculiarities which it has retained several years



in my garden. *A. Sibiricum* abounds also on the sea-cliffs at Tintagel, where it was discovered by the *Rev. R. T. Bree*." (*Mr. Borrer*.)

\*\*\*\* *Leaves fistulose. Alternate filaments 3-pointed, middle point bearing the anther.*

6. *A. vineale* L. (*Crow G.*); umbel globose bearing numerous bulbs, stem leafy below, leaves fistulose cylindrical slightly channelled above, spatha of one leaf short with long slender points, stamens exserted 3 alternate ones deeply 3-cleft, middle points half as long as the lateral ones and as long as the entire part of the filaments. *E. B. t.* 1974.

Corn-fields, waste places, &c, not unfrequent throughout England and the south of Scotland; also near Dublin. *fl.* 6. — *Stem*  $1\frac{1}{2}$ —2 ft. high. *Bulbs* numerous. *Spatha* of one deciduous leaf. *Flowers* on longish peduncles, which are thickened upwards, few, erect, reddish, green on the keels, shorter than the *stamens*, whose *filaments*, as well as the *anthers*, are protruded.

7. *A. sphaerocéphalum* L. (*small round-headed G.*); umbel globose without bulbs, stem leafy below, leaves subcylindrical channelled above smooth fistular, spatha 2-valved short, stamens twice as long as the perianth the alternate ones 3-cleft, middle point longer than the lateral ones as long as the entire part of the filament, bulb accompanied by stalked offsets. *E. B. S. t.* 2813.

On the sands of St. Aubin's Bay, Jersey. *fl.* 6, 7.

\*\*\*\* *Leaves broad, flat, all radical. Stamens all simple.*

8. *A. ursinum* L. (*broad-leaved G. or Ramsons*); umbel nearly plane, leaves ovate-lanceolate on footstalks, scape triangular. *E. B. t.* 122.

Moist woods and hedge-banks, frequent. *fl.* 4—6. — *Flowers* white. *Umbels* without bulbs, level-topped. *Spatha* of 2 ovate-lanceolate leaves.

(*Allium ambiguum* Sm. in *Fl. Græca*, "almost exclusively confined to the south of Europe, and an old inhabitant of our gardens," we regret to see introduced into the *Supplement to English Botany* (tab. 2803) solely on the ground of its having been found, in a very suspicious locality, a little above Rochester.)

### 9. *SCILLA* Linn. Squill.

*Perianth* of 6 sepals, spreading and deciduous. *Filaments* filiform, glabrous, inserted on the base of the perianth. *Flowers* blue or purple, racemose or corymbose, on a leafless scape, without a spatha. Bractæas membranaceous or obsolete. — Named from σκυλλω, to injure: in Arabic also âsgyl.

1. *S. verna* Huds. (*vernal S.*); bulb coated, raceme in a hemispherical few-flowered corymb, bractæas lanceolate obtuse

as long or longer than the pedicels, leaves linear channelled. *E. B. t. 23.*

Common on the western and northern coasts of Great Britain, frequent in Orkney and Shetland. Ireland. 4. 4, 5. — *Plant* 4—5 inches high. *Leaves* few, nearly as long as the scape. *Flowers* fragrant, deep blue. *Filaments* dilated downwards.

2. *S. \*bifolia* L. (*twin-leaved S.*); bulb coated, raceme lax subcorymbose, bracteas obsolete, leaves lanceolate mostly 2. *E. B. t. 24.*

A very dubious native. It exists in *Buddle's Herbarium*, and was received from the west of England by *Mr. Sims* of Norwich. 4. 3, 4. — *Flowers* pale blue.

3. *S. autumnalis* L. (*autumnal S.*); bulb coated, raceme scarcely corymbose, bracteas none, pedicels and stamens about as long as the perianth; leaves linear several. *E. B. t. 78.*

Dry pastures and rocks. Cornwall; near Bristol; Moulsey Hurst; Blackheath and Richmond, abundant; Flagpost-hill, Torquay; St. Helen's, Isle of Wight, plentiful. Jersey. 4. 7—9. — *Flowers* pinkish-purple, in perfection before the leaves appear.

# 10. ORNITHOGALUM Linn. Star of Bethlehem.

*Perianth* spreading, of 6 sepals, persistent. *Stam.* hypogynous, scarcely adhering to the perianth, alternately larger or dilated at the base. *Capsules* with 3 angles and 3 furrows. — *Flowers* white, racemose or corymbose, on a leafless scape. Bracteas membranaceous. — Named from *opvis*, *opvidos*, a bird, and *γαλα*, milk. Linneus imagines that the roots of *O. umbellatum* are the "*Dove's Dung*," which was sold so dear at the siege of Samaria, as mentioned in the 2nd book of Kings: they are still much used for food in the Levant. (*See E. B. t. 130.*)

1. *O. Pyrenæicum* L. (*spiked S.*); racemes elongated, filaments dilated below with a long point, peduncles equal spreading erect in fruit. *E. B. t. 499.*

Rare. Pastures in Somersetshire, Sussex, and Bedfordshire. 4. 6, 7. — *Bulb* ovate. *Leaves* long, linear, acuminate, channelled. *Scape* 1½—2 ft. long. *Raceme* elongated. *Flowers* much smaller than in the two following species, greenish-white.

2. *O. \*umbellatum* L. (*common S.*); racemes corymbose, peduncles longer than the bracteas, filaments subulate simple. *E. B. t. 130.*

Meadows and pastures in various parts of England. Near Glasgow; Kinross-shire; banks of the Jed, near the old castle of Fernihurst, Jedburgh. 4. 5, 6. — *Stem* 8—10 inches high. *Leaves* linear, acuminate, grooved. *Flowers* large, few, 6—9; lower pedicels very long, so that their flowers reach to the same height with the upper ones, thus forming a corymb, each having a membranous lanceolate

*bractea*. Segments of the *perianth* green, with a white margin and white within.

3. *O. \*nūtans* L. (*drooping S.*); flowers pendulous unilateral, filaments broad membranous trifid middle point very short bearing the anther between the two longer lateral ones. *E. B.* t. 1997.

Fields and orchards, Bedfordshire, Suffolk, Derby, and Nottingham. 4. 4, 5. — *Flowers* in a true, but lax, *raceme*, larger than the last, and having the *filaments* of their *stamens* of a very different structure.

\*\*\*\* *Fruit* dry, capsular. *Root* bulbous. *Stem* more or less leafy. *Peduncles* (or *pedicels*) without membranaceous *bracteas* at the base, springing from the axils of true leaves, not jointed with the flower. *Sepals* distinct. *Ovules* many in each cell. *Tulipeæ*. (Gen. 11—14.)

# 11. *GÁGEA* Salisb. *Gagea*.

*Perianth* of 6 persistent pieces, connivent below, spreading above, without a nectariferous fold or depression at the base. *Filaments* not dilated at the base. *Anthers* erect. *Style* erect, trigonal, fistulose. *Capsule* triangular. *Seeds* subglobose. — *Flowers* corymbose or umbellate, yellow, with foliaceous *bracteas*. — Named in honour of the late Sir Thos. Gage, Bart., an excellent British botanist.

1. *G. lútea* Ker (*yellow Gagea*); radical leaves 1—2 linear-lanceolate longer than the angular scape, umbel simple, *bracteas* linear-lanceolate longer than the umbel, leaves of the *perianth* obtuse, bulb ovate solitary. *Ornithogalum E. B.* t. 21.

Woods and pastures, in several parts of England and Lowlands of Scotland. 4. 3—5. — All the species of this genus are so similar, that more than one may exist in this country. The allied *G. pratensis* is equally abundant on the Continent and is by some considered a mere variety: it has however each bulb composed of 3 small ones, the whole included within a common covering. In another equally common species( *O. arvensis*) the bulb is composed of 2 smaller ones.

# 12. *LLÓYDIA* Salisb. *Lloydia*.

*Perianth* of 6 nealy equal, spreading, persistent pieces. *Filaments* subulate, glabrous. *Anthers* erect. *Style* erect. *Capsule* triquetrous, thin in texture. *Seeds* angled above and flat below. — *Flowers* solitary or few and corymbose, white with red or green veins. *Bracteas* foliaceous. — Named in honour of Mr. Edward Lhwyd, a learned antiquarian and skilful naturalist of the 17th century, who first discovered this plant in Britain.

1. *L. serotína* Reich. (*Mountain L.*); leaves semicylindrical,

cauline ones dilated at their base, flowers mostly solitary, sepals with a transverse nectariferous plait above the base. *Anthericum* L.: *E. B.* t. 793. *Phalangium* Poir.

On the Welsh mountains, rare. Snowdon, on the elevated rocks called Trigvylchau y Clogwyn du ymhen y Gluder, Clogwyn yr Ardhu Crib y Disth, &c.; Twll dû; near the summit of Gluder Fawr; Cwm Idwel, Caernarvonshire. 4. 6.—*Stem* 5—6 inches high. “*Flower-stalk* invested with its own sheath, and separated by an elongation of the *root* from the *leaves*, of which the most distant encloses within its fleshy base the rudiment of the plant of the following season. The plant is increased by offsets or creeping shoots with a bulb at the extremity, the point of the bulb being directed towards the parent root. *Perianth* permanent, withering; its segments nectariferous. *Stamens* not attached to the perianth, beardless. The lateral ribs at the back of the leaf are one on each side of the keel, not close to the margin of the leaf. Two-flowered specimens are very unfrequent:” *W. Wilson*.

### 13. TULIPA Linn. Tulip.

*Perianth* campanulate, of 6 pieces, without a nectariferous depression, deciduous. *Anthers* erect. *Stigma* sessile, 3-lobed. *Capsule* trigonous. *Seeds* flat.—Flowers usually solitary, rarely two on each stem.—Name: from *tolibun*, the Persian name for a turban, whose gay colours are similar to those of the tulip. (*Théis*.)

1. *T. sylvestris* L. (*wild Tulip*); stem 1-flowered somewhat drooping, leaves of the perianth ovate-acuminate bearded at the extremity, stamens hairy at the base, stigma obtuse. *E. B.* t. 63.

Chalk-pits in Norfolk, Suffolk, Hertfordshire, and Middlesex. In Scotland, near Hamilton and Brechin; and in an old quarry at Bennie Craig, near Linlithgow; Petreavie, Otterstone, and Pitcullo Castle, Fifeshire. 4. 4.—*Flowers* yellow, fragrant. *Anthers* and *pollen* yellow. *Leaves* linear-lanceolate. The *wild Tulip* increases by throwing out a long stout fibre from its root, at the extremity of which a bulb appears. Thus a new individual is planted at a considerable distance from the parent.

### 14. FRITILLARIA Linn. Fritillary.

*Perianth* campanulate, of 6 pieces, each with a nectariferous depression near the base. *Anthers* attached to the filament above the base in front. *Style* 3-cleft at the apex. *Capsule* 3-celled, 3-valved, oblong. *Seeds* flat.—Name apparently from *fritillus*, a dice-box, the chequered colours in the flower resembling the board upon which the dice are thrown.

1. *F. Meleagris* L. (*common F.* or *Snake's-head*); stem sin-

gle-flowered, leaves alternate linear-lanceolate, points of the perianth inflexed, nectary linear. *E. B. t.* 622.

Meadows and pastures, principally in the east and south of England. *Æ. 4.* — Varies with white flowers. Specific name derived from the *Numidius Meleagris*, or *Pintado*, whose plumage is chequered in a somewhat similar manner.

(*Lilium Martagon* L. has been established in some parts of the country, and figured in *E. B. S. t.* 2799, but has no right to be admitted into our Flora.)

### ORD. XCV. MELANTHACEÆ *R. Brown.*

*Perianth* petaloid, 6-partite or tubular by the cohesion of the claws of the segments, which are often rolled inward before expansion. *Stamens* 6, perigynous. *Anthers* attached below the middle, at first turned outwards, but sometimes afterwards inwards by resupination. *Ovary* free, with 3 cells and many seeds. *Style* partly or entirely divided into 3. *Stigmas* undivided. *Capsules* separable into 3 valves. *Integument* of the seeds neither black nor crustaceous, but membranous. *Albumen* firm, fleshy. — Root sometimes bulbous. Leaves sheathing at the base, with parallel nerves. — Strongly narcotic, diuretic, and cathartic. Veratrine is extracted from *Veratrum Sabadilla*.

1. COLCHICUM. *Perianth* tubular, very long; limb 6-partite. Styles long.
2. TOFIELDIA. *Perianth* 6-partite. Styles short.

#### 1. CÔLCHICUM *Linn.* Meadow-Saffron.

*Perianth* tubular, very long, rising from a spatha; limb campanulate, 6-partite, petaloid. *Caps.* 3-celled; cells united at the base. — Named from *Colchis*, where it was said to grow abundantly.

1. *C. autumnale* L. (*common M.*); leaves plane broadly lanceolate erect. *E. B. t.* 133. *Var.* with late green abortive flowers. *E. B. t.* 1432.

Meadows and pastures, chiefly in the north-west of England: *Ray.* In Suffolk, Oxfordshire, Staffordshire, Cheshire, and other places. Alloa, Scotland. *Æ. 8—10.* — *Bulb* solid. The flowers appear in succession, rising from the bulb, with a very long narrow tube, surrounded at the base with a membranous sheath. The stamens are inserted on the oblong-ovate segments of the pale purple perianth. Germs at the base of the bulb, its long thread-like styles running up the whole length of the tube. The leaves and fruit appear in spring and are withered before summer. Its properties are said to be similar to those of the officinal Squill, and it has been employed as a substitute for the famous *Eau médicinale*.

## 2. TOFIELDIA Huds. Scottish Asphodel.

*Perianth* 6-partite, having a small 3-partite involucre. *Stamens* glabrous. *Caps.* 3—6-celled; cells united at the base, many-seeded. — Named in honour of Mr. Tofield, an English botanist.

1. *T. palustris* Huds. (*Mountain S.*); spike ovate, stem glabrous filiform nearly leafless, petals obovate obtuse, germen 3-lobed, involucre at the base of the pedicel. *E. B. t.* 536. *T. borealis* Wahl. *Anthericum calyculatum* L.

Mountains of England, Scotland, and Ireland, in boggy places; not rare. *℥.* 7—8. — *Stem* 4—6 inches high. *Leaves* almost wholly radical, in fascicles, linear, sword-shaped, equitant. *Flowers* small, pale yellowish-white.

## ORD. XCVI. RESTIACEÆ R. Brown.

*Flowers* capitate, or spiked, bracteated, glumaceous, or white or colourless, 2—6-partite, seldom 0. *Stamens* hypogynous, 1—6; when 2 or 3, in a 4-lobed *perianth*, opposite the inner segments of the latter. *Ovary* free, with 1 or more cells. *Ovules* solitary, pendulous. *Fruit* capsular or nucumentaceous. *Seeds* solitary, inverted. *Embryo* lenticular, within the base of a copious *albumen*. — Herbs (and, in some species of *Eriocaulon*, marsh-plants) or under-shrubs. *Leaves* with parallel nerves or veins simple, narrow or 0. *Stems* naked, or more usually with sheaths slit on one side. *Flowers* generally monœcious, separated by scales or bractæas.

## 1. ERIOCAULON Linn. Pipewort.

*Flowers* white or colourless, collected into a compact, scaly head. — Barren flowers in the centre. *Perianth* 4—6-cleft, the inner segments united nearly to their summit. *Stam.* 4—6. *Anthers* 2-celled. — Fertile flowers in the circumference. *Perianth* deeply 4-partite. *Style* 1. *Stigmas* 2—3. *Capsule* 2—3-lobed, 2—3-celled. — Named from *ερion*, wool, and *καυλος*, the stem; in allusion to the downy stems or scapes of the species first known.

1. *E. septangulare* With. (*jointed P.*); scapes striated longer than the cellular compressed subulate glabrous leaves, flowers 4-cleft hairy at the extremities as well as the scales, stamens 4, capsule 2-celled. *E. B. t.* 733. *E. pellucidum* Mich.

Lakes in mountainous countries, rare. In *Skye*, *Coll*, and a few of the neighbouring islands of the Hebrides. *Cunnamara*, N. W. of *Ireland*, frequent. *℥.* 8. — *Roots* creeping, and throwing out in-

numerable, white, curiously articulated *fibres*, which penetrate deep into the mud. *Leaves* pellucid, beautifully cellular, as is the *scape*. *Head* of numerous, compact, minute *flowers*; each with an obovate, membranous, concave *scale*, nearly as long as itself. *Two outer segments* of the *perianth* duplicato-carinate, purplish; *two inner* white; those of the central *sterile flowers* united for a great proportion of the length, so as to be two-lipped at the extremity; each *lip* bearing a *stamen*, and above that a black sessile *gland*, and on either side, between the two lips, a *stamen*: in the centre between these are two black, stalked glands (abortive *styles*?). In the *fertile flowers*, the 4 segments are almost equally divided to their base, the inner having a black, sessile gland at the extremity. *Pistil* shortly stipitate. *Germen* of 2 globose lobes. *Style* short. *Stigmas* 2, long, subulate. — In the *Flora Londinensis* n. s. t. 52 the sterile flower is not correctly represented as to its usual appearance; nor the situation of the *gland*, which is not below, but above, the point of insertion of the *stamen*.

### ORD. XCVII. JUNCACEÆ Juss.

*Perianth* 6-partite, subglumaceous (usually scarious, sometimes herbaceous and coloured internally, but at length dry and hard), persistent: *Stamens* 6, inserted into the base of the segments, or sometimes 3, and then opposite the outer segments. *Ovary* free, imperfectly 3-celled, and many-ovuled, or 1-celled and 3-ovuled. *Style* 1. *Stigmas* usually 3, sometimes 1. *Fruit* capsular, with 3 valves, bearing the dissepiment in the middle, rarely closed and by abortion 1-seeded. *Embryo* minute, cylindrical, at the base of a hard fleshy or cartilaginous *albumen*. — Herbs. *Leaves* grassy or subulate, with parallel nerves or veins, sometimes wanting.

1. JUNCUS. *Perianth* glumaceous. *Filaments* glabrous. *Stigmas* 3. Capsule mostly 3-celled, many-seeded.
2. LUZULA. *Perianth* glumaceous. *Filament* glabrous. *Stigmas* 3. Capsule 1-celled, 3-seeded.
3. NARTHECIUM. *Perianth* coloured. *Filaments* hairy. *Stigma* 1. Capsule 3-celled at the base, many-seeded.

#### 1. JUNCUS Linn. Rush.

*Perianth* of 6 leaves, glumaceous. *Filaments* glabrous. *Stigmas* 3. *Caps.* 3-celled, 3-valved; *valves* with the seed-bearing *dissepiments* in their middle. *Seeds* numerous. (*Leaves* rigid, mostly rounded, rarely plane, glabrous.) — Named from *jungo*, to join; the leaves and stems of this genus having been employed for cordage.

\* *Leaves* none. *Barren scapes* resembling leaves. *Panicle* lateral. *Flowers* scattered. *Seeds* with their coat close, not appendaged.

1. *J. effusus* L. (soft R.); *scapes* very faintly striated soft,

"pith continuous," panicle branched, sepals spreading lanceolate nearly equal acuminate rather longer than the obovate retuse not apiculate capsule. —  $\alpha$ . panicle diffuse branched. *E. B.* t. 836. —  $\beta$ . panicle more or less dense, globose.

Marshy ground, common. —  $\beta$ . Near Bath. 4. 7. — This and the next are distinguished from *J. glaucus* by their soft, pliable, almost smooth (scarcely striated) scapes. It is more difficult to distinguish it from *J. conglomeratus*, with which indeed *E. Meyer* and most foreign botanists now unite it. Stam. 3 or 6. — Excellent, as is the following, for platting into mats, chair-bottoms, &c. Wicks of candles are made of the pith.

2. *J. conglomeratus* L. (*common R.*); scapes very faintly striated soft, "pith continuous," panicle branched, sepals lanceolate acute nearly equal about as long as the obovate retuse apiculate capsule, stamens 3. —  $\alpha$ . panicle dense, globose. *E. B.* t. 835. —  $\beta$ . panicle more or less diffuse.

Marshy ground, frequent. 4. 7. — Panicle usually very dense. Scape resembling the last, and employed for the same purposes. Sometimes only to be distinguished from the last by the apiculate capsule.

3. *J. diffusus* Hoppe (*loose-flowered R.*); scapes finely striated rigid, "pith continuous" (or interrupted), panicle loose much branched erect, sepals lanceolate subulate longer than the obovate obtuse mucronate capsule, stamens 6. *Hoppe in Sturm's Deutsch. Flora*, 77. 10.

Wet places, rare. Hertingfordbury and Hoddesdon, Herts; near Ashby-de-la-Zouch and Twycross, Leicest.; between Guildford and Woking Railway Station, Surrey; Epping Forest (between Walthamstow and Woodford) and Halstead, Essex; Isle of Wight, and Hayling Island, Hants. Kincardine, Scotland. 4. 7, 8. — Of this we have seen no British specimen: it appears to be a mere variety of the *J. glaucus*, with which indeed *E. Meyer* unites it, and with which we understand it always grows intermixed in this country. Dr. Bromfield considers it a hybrid between *J. glaucus* and *J. conglomeratus*, with both of which he always finds it associated, and mentions that the character taken from the pith is not absolutely to be depended upon: we doubt if it be so in any of these species.

4. *J. glaucus* Ehrh. (*hard R.*); scapes deeply striated rigid, "pith interrupted," panicle loose much branched, sepals lanceolate subulate nearly equal rather longer than the elliptic-oblong mucronate capsule, stamens 6. *E. B.* t. 665.

Wet pastures and by road-sides. 4. 7. — Root creeping. Scapes 1—2 ft. high, glaucous, rigid, covered at the base with deep purple-brown, membranaceous, shining sheaths. Panicle lax, erect. Flowers slender, pale brown, with a broad green line down the middle of each leaflet of the perianth. Bractees small and acuminate.

5. *J. Balticus* Willd. (*Baltic Rush*); scapes very obscurely striated rigid, "pith continuous," panicle erect branched, sepals



nearly equal ovate-lanceolate very acute as long as the elliptical scarcely trigonous obtuse mucronate capsule, stamens 6. *E. B. S. t.* 2621. *J. arcticus* Hook in *Fl. Lond.* t. 151 (not Willd.)

Sandy sea-shores in Scotland. Near Dundee; Mr. T. Drummond: Farr, and Cape Wrath, Sutherland; Dr. Graham: Aberdeenshire: Stotfield, 6 m. from Elgin, between Findhorn and Spey, on the banks of the Lossie, 7 m. from the sea; and also at St. Andrew's and Langbride, near Elgin, where the sea formerly reached. *Æ.* 7.—This comes very near the true *J. arcticus*; it is, however, assuredly the *J. Balticus* of Willdenow, and differs from *J. arcticus* in its much taller and more rigid *scapes*, larger and decidedly branched *panicle*, and rounded, not trigonous, *capsules*. Both have exceedingly creeping *roots*, more so than any other species we are acquainted with. *Flowers* dark brown, with a pale line down the centre of each segment.

6. *J. filiformis* L. (*Thread Rush*); *scapes* filiform faintly striated, *panicle* simple of few flowers from near the middle of the scape, *sepals* lanceolate acuminate nearly equal larger than the roundish-obovate obtuse mucronate capsule, stamens 6. *E. B. t.* 1175.

Stony margins of lakes in Cumberland, Westmoreland, and Lancashire. Ben-Lawers, and several parts of Scotland; but I have never seen Scottish specimens. *Æ.* 7, 8.—*Root* creeping. *Plant* remarkable for its slender *scapes*, extended greatly beyond the *panicle*, its pale greenish *flowers* and short *capsules*.

\*\* *Leaves* none. *Barren scapes* resembling *leaves*. *Panicle* terminal. *Flowers* aggregated. *Stamens* 6. *Seeds* with a loose coat forming an appendage at each end.

7. *J. maritimus* Sm. (*lesser sharp Sea R.*); *barren scapes* and outer *bracteas* pungent, *panicle* compound erect, clusters 4—8-flowered, *sepals* equal lanceolate acute as long as the elliptical mucronated capsule. *E. B. t.* 1725. *J. acutus* *β.* L.

Salt marshes in various parts of England, but not frequent. St. Andrew's, Scotland. Coast of Ayrshire. Kingstown and other places in Ireland. *Æ.* 7, 8.—“The white base of the *scapes* is extremely clammy and emits a fragrant odour resembling cedar-wood.” *Bromf.* In this and the following, the outer *bractea*, or portion that rises above the *panicle*, is broad and membranous at the base and less like a continuation of the scape than in the species of the preceding division.

8. *J. acutus* L. (*great sharp Sea R.*); *barren scapes* and outer *bracteas* pungent, *panicle* very compound mostly compact, clusters 2—4-flowered, *sepals* equal about half as long as the broadly ovate suddenly acuminate capsule, interior 3 with a broad membranaceous border at the apex. *E. B. t.* 1614.

Sandy sea-shores, principally on the south and west of England and Wales. Norfolk. Wicklow and Arklow, Ireland. *Æ.* 7.—Larger

and stouter than the last, especially the *capsules*, which are of considerable size, much protruded, rich brown and glossy.

\*\*\* *Stems leafy. Leaves rounded or subcompressed and usually distinctly jointed interhally. Panicle terminal. Flowers aggregated or fascicled. Seeds without an appendage at the ends.*

9. *J. acutiflorus* Ehrh. (*sharp-flowered jointed R.*); stem and leaves subcompressed, panicle very compound pyramidal, clusters 5—6-flowered, leaflets of the perianth unequal lanceolate very acute nearly as long as the narrow ovate subacuminate (pale brown) capsule. *E. B. t.* 2143. *J. articulatus* *E. B. t.* 238.

Bogs, very common. 4. 6—8. — *Stem* 1—2 feet high, erect. *Leaves* 3—4 on a stem, distinctly nodoso-articulate when dry. *Panicle* diffuse, in fruit spreading. *Flowers* several together, greenish-brown. *General bractees* short, membranaceous, scarcely leafy. *Capsules* pale-coloured.

10. *J. nigrifellus* D. Don (*black-headed jointed R.*); stem and leaves somewhat rounded, panicle slightly compound erect, sepals acute shorter than the linear oblong trigonous rostrate capsule, interior 3 rather longer and broader. *E. B. S. t.* 2643.

Marshy spots on the mountains of Clova, Forfarshire. 4. 7, 8. — Similar to the next, but the sepals are decidedly acute. *Capsule* at length black and glossy, larger and more suddenly pointed than in *J. lampocarpus*, of which however we still incline to think it only a variety, both being easily distinguished by the fruit, therein agreeing with *J. fusco-ater* Schreb. which however has the sepals very obtuse and the outer ones mucronulate below the summit.

11. *J. lampocarpus* Ehrh. (*shining-fruited jointed R.*); stem ascending and as well as the leaves compressed, panicle repeatedly compound erect or somewhat spreading, clusters 4—6- or 8-flowered, sepals equal the ends obtuse shorter than the acute triquetrous oblong-lanceolate (dark brown) capsule, interior 3 obtuse. *E. B. t.* 2143.

Boggy-grounds and watery places, frequent. 4. 7, 8. — *Capsules* dark brown and shining.

12. *J. obtusiflorus* Ehrh. (*blunt-flowered jointed R.*); stem and leaves erect rounded, panicle very compound spreading and divaricated, clusters 3—6-flowered, sepals equal obtuse about equal in length with the ovate-acute trigonous (pale brown) capsule. *E. B. t.* 2143.

Wet pastures and marshes, not unfrequent. 4. 8. — Distinct as this species assuredly is, it has very frequently been confounded with the preceding ones of this division.

13. *J. uliginosus* Sibth. (*lesser Bog jointed R.*), stem erect and often swollen at the base or decumbent and rooting, leaves bristle-shaped slightly grooved faintly jointed internally, panicle

nearly simple irregular, clusters few or many-flowered, sepals equal oblong nearly as long as the elliptical very obtuse mucronate (pale brown) capsule, outer 3 acute, inner ones rather obtuse. *E. B. t. 801.* *J. bulbosus* L. *J. subverticillatus* Wulf. *J. supinus* Manch.

Boggy and swampy places, and often partly floating in shallow water. 4. 6—8. — A highly variable plant; depending much for its appearance on soil and situation. In rather dry places it often rises erect, 3—4 inches high, having a bulbous or swollen base, and is then the original *J. bulbosus* L. At other times the stems are spreading or procumbent, when it becomes the *J. subverticillatus* of Wulfen. Again, these procumbent stems often take root at intervals, and are proliferous; or, when growing in water, they float upon the surface and spread their long flaccid branches in all directions. The ramifications and panicles are exceedingly irregular; the latter few-flowered. It is often extremely difficult to distinguish this from small varieties of *J. lampocarpus*.

\*\*\*\* Stems leafy. Leaves plane or grooved above; not distinctly jointed.

† Seeds with an appendage at each end.

14. *J. castaneus* Sm. (clustered Alpine R.); stem rounded 2—3-leaved, leaves hollow grooved above rounded at the back, heads of flowers terminal generally single sessile or peduncled shorter than the bractea, capsules ovate-oblong pointed bluntly trigonal nearly twice as long as the elliptic-lanceolate acute sepals. *E. B. t. 90.*

Rare, on the elevated mountains of Braedalbane. Rocks at the head of Glen Callader, in Braemar. In the county of Durham. 4. 7, 8. — "Root slightly creeping, with short runners or lateral shoots. Stem hollow. Leaves with the channelled side very thin and membranaceous; and within are found distant transverse partitions. Upper part of the leaf rounded and compressed. Sepals 3-ribbed. Style breaking off at a joint. Capsule shining, and as well as the perianth and inner bractea of a deep chocolate colour:" *W. Wilson.*

15. *J. trifidus* L. (three-leaved R.); stem 1-leaved, sheaths fringed those of the base of the stem leafless, bractea 2 resembling the setaceous solitary stem-leaf, heads of about three terminal flowers, capsule rounded-elliptical beaked longer than the acute sepals. *E. B. t. 1482.*

Rocky places on the Highland mountains of Scotland. 4. 7, 8. — Very unlike any other British *Juncus*. Root creeping. Lower sheaths with at most a short awn, scarcely to be termed a leaf. A solitary leaf is on the stem, generally near the summit, 2—3 inches long, linear, setaceous. Capsule with a furrowed beak.

†† Seeds without an appendage.

16. *J. compressus* Jacq. (round-fruited R.); stem erect more or less compressed, leaves linear-setaceous grooved, panicle terminal compound subcymose, capsules roundish-ovate or oval

mucronate equal to or longer than the oval-oblong obtuse incurved sepals. — *α*. panicle usually shorter than the bractea, perianth shorter than the roundish-ovate shortly mucronate capsule. *J. bulbosus* *E. B. t.* 934. — *β*. panicle usually longer than the bractea, perianth as long as the oval-oblong strongly mucronate capsule. *J. cænosua* *Bick. : E. B. S. t.* 2680. *J. Gerardi* *Loisel.* *J. Bothnicus* *Wahl.*

West marshy places, common. — *β*. In salt-marshes. *γ*. 6—8. — Having seen various specimens of both varieties, we feel confirmed in our opinion that they are merely extremes of the same species; indeed La Harpe, although he retains both, allows that there are many specimens so intermediate that it is impossible to say to which to refer them. We believe that in Scotland it has never been found, except in the vicinity of the sea.

17. *J. \*tenuis* Willd. (*slender spreading R.*); stem above shortly dichotomous panicle, leaves linear setaceous grooved, flowers solitary unilateral approximate mostly sessile, capsules broadly elliptical obtuse mucronate shorter than the ovate-lanceolate very acuminate leaflets of the perianth. *J. gracilis* *E. B. t.* 2174. *J. Gesneri* *Sm. : E. Fl. ii. p.* 167. *J. Smithii* *Kunth.*

Moist mountains of Clova; *G. Don. γ.* 7. — We have specimens from Don's garden at Forfar, but we doubt much if the roots were found in Clova. It is a common N. American species, and has been long in cultivation in this country and on the Continent: it is said to grow in Belgium, but we fear it is there only the outcast of a garden; specimens have, however, been sent us from various parts of Europe, although scarcely noticed in any botanical work as a native of Europe. It is allied to *J. bufonius*, yet really distinct. *Radical leaves* several; *stem* bare of leaves up to the division near the top, where is one leaf immediately beneath the foliaceous bractea. In the axils of the forks are 2 or 3 large nearly sessile flowers, and 2 or 3 unilateral ones on the the branches. The capsule is very different from that of the following species.

18. *J. bufonius* L. (*Toad R.*); stem dichotomous above panicle, leaves filiform setaceous grooved, flowers solitary unilateral mostly sessile, capsules oblong obtuse much shorter than the very acuminate leaflets of the perianth. *E. B. t.* 802.

Frequent in moist watery places, especially such as have been overflowed in winter. ☉. 8. — *Stem* 4—6 inches high. *Leaves* few, slender, only one on the stem, generally near the middle. The divisions or ramifications of the stem, as they are called, belong more properly to the panicle, at the base of which are foliaceous bractea. Whole plant very pale coloured. *Flowers* green, with white membranous margins to the leaflets of the perianth.

\*\*\*\*\* *Leaves all radical. Flowers terminal.*

† *Seeds without an appendage.*

19. *J. squarrosus* L. (*Heath R.*); leaves setaceous rigid

grooved, panicle terminal elongated compound, capsules elliptical ovate. *E. B.* t. 933.

Moory and heathy ground, abundant. 21. 6, 7. — Whole plant exceedingly rigid, 6 inches to 1 foot high. *Leaves* subsecund, about half as long as the *scape*. *Bractees* lanceolate, membranaceous. *Leaflets* of the *perianth* ovate-lanceolate, glossy brown with a pale line down the middle, scariose at the edges. *Capsule*, as in almost all this genus, tipped with a short mucro, the remains of the *style*, palish-brown.

20. *J. capitatus* Weigelt. (*capitate R.*); leaves filiform (soft) plane or grooved above, heads of flowers sessile terminal shorter than the setaceous bractea, sepals ovate-lanceolate acuminate-aristate twice as long as the truncate shortly mucronate capsule. *Hook. in E. B. S.* t. 2644. *J. supinus* Bich. *J. ericetorum* DC.  $\beta$ .  $\gamma$ .

Jersey: *Mr Hudson*. ☉. 5—7. — Plant 2—4 inches high, flaccid. *Leaves* entirely radical, about half the length of the *scape*, erect. *Heads* rather large in proportion to the size of the plant, of 3—6 sessile flowers, occasionally proliferous. *Stamens* usually 3, sometimes 6. This species is well distinguished by the setaceous inclined bractea (with its sheathing membranaceous base), which is longer than the heads of flowers, and by the acuminate-aristate perianth.

†† *Seeds with an appendage at each end.*

21. *J. biglumis* L. (*two-flowered R.*); leaves linear-subulate compressed (not channelled) gradually dilated into the sheathing base, flowers 2 unilateral, one of them stalked mostly shorter than the foliaceous involucre, capsule turbinate retuse rather longer than the obtuse leaves of the perianth. *E. B.* t. 898.

Boggy places on the Highland mountains, not unfrequent on the Breadalbane range, but rare in other parts of Scotland. 21. 7, 8. — *Root* fibrous. *Stem* 2—4 inches high, growing not in tufts, but scattered: a much rarer species than the following, small specimens of which have often been mistaken for it. "*Leaves* with distant transverse partitions within, but not longitudinally divided:" *Mr. W. Wilson*.

22. *J. triglumis* L. (*three-flowered R.*); leaves linear-subulate channelled bitubular their sheaths auricled above, flowers mostly 3 generally as long as the membranaceous bractea, capsule elliptical acute longer than the rather obtuse leaflets of the perianth. *E. B.* t. 899.

Boggy places among the mountains in the north of England, Wales, and especially the Highlands of Scotland. 21. 7, 8. — *Mr. W. Wilson* has well studied, in living plants, the character of this and the preceding species of Rush. "*Stems*," he says, of this plant, "several from the same root, perfectly rounded, not channelled on one side, as in *J. biglumis*, naked above, and generally with 2, and some-

times 3 leaves near the base. *Leaves* with dilated *sheaths*, which are auricled at the top, setaceous, channelled, *bitubular*, with transverse partitions; *radical leaves* also setaceous, more slender and longer than in *J. biglumis*. Sometimes 4 *flowers* are found together, the additional ones placed lower down and separated from the rest. Outer *bractea* sometimes as large as in *J. biglumis*: each flower has one bractea at its base. *Cal.-leaves* more membranous than in the last, narrower and more acute. *Capsule* longer than the calyx, with a tapering rather acute extremity, and with indistinctly furrowed sides; colour almost black." *W. Wilson*.

## 2. LÚZULA De Cand. Wood-rush.

*Perianth* of 6 leaves, glumaceous. *Filaments* glabrous. *Stigmas* 3. *Caps.* 1-celled, 3-valved; *valves* without dissepiments. *Seeds* 3, at the bottom of the capsule. (*Leaves soft, plane, generally hairy*) — Name: the *Gramen Luzulæ* of Bauhin. *Luzulu*, Smith tells us, is altered from *lucciola*, or *luzziola*, a glow-worm; because the heads of flowers, wet with dew and sparkling by moonlight, gave the elegant Italians an idea of those brilliant insects. Hence the learned author of the *English Flora* contends for *Luciola* as the proper orthography.

1. *L. sylvática* Bich. (*great hairy W.*): leaves hairy, panicle subcymose doubly compound, peduncles elongated of about 3 fascicled flowers, leaflets of the perianth aristate as long as the ovate mucronate capsule, seed minutely tubercled at the end, filaments very short. *L. maxima* DC. *Juncus sylvaticus* Huds.: *E. B. t.* 737. *J. pilosus* ð. *L.*

Woods, hilly places, and upon the mountains, frequent. 4. 5, 6. *Stem* 1—1½ ft. high. *Leaves* broad, shining; striated. *Floral bractees* ciliated. *Caps.* with a very sharp point, deep brown. *Seeds* elliptic-ovate, with scarcely any crested appendage on the top.

2. *L. pilósa* Willd. (*broad-leaved hairy W.*); cæspitose, leaves hairy, panicle subcymose but little branched spreading, peduncles 1-flowered bent back when in fruit, sepals acuminate rather shorter than the retuse capsule, its valves truncated, seeds with a long hooked appendage at the top, filaments about half the length of the anthers. *Juncus L.*: *E. B. t.* 736.

Woods, frequent. 4. 3—5. — Much smaller than the last, with the *flowers* standing singly on the *panicle*, dark brown. *Capsule* broadly ovate, contracted below the summit where it is so retuse as to appear truncated. Appendage of the seeds hooked and recurved at the point.

3. *L. Försteri* DC. (*narrow-leaved hairy W.*); cæspitose, leaves hairy, panicle subcymose but little branched contracted, peduncles 1-flowered erect, leaflets of the perianth narrow acuminate a little longer than the acute capsule, seeds with a straight obtuse appendage at the top, filaments about as long as the anther. *Juncus E. B. t.* 1293.

Groves and thickets, especially on a calcareous or gravelly soil. More common in Surrey and Isle of Wight than *L. pilosa*. About Forfar, and banks of the Doune, Ayrshire. 4. 3—6. — Much slenderer than the last in every part and taller. Seed with a large oblong crested appendage on the top. — Somewhat intermediate between this and the last, but apparently different from both, is a plant found in the Isle of Wight, Sussex, and Herefordshire, which seems never to perfect its seeds: it is larger and in some places more abundant than either; the panicle is loose and the filaments about half as long as the anthers, as in *L. pilosa*, the unripe capsule acute, the ovules exhibiting a straight appendage, although this last may be different in the ripe seed. Can it be a hybrid? or are the roots creeping?

4. *L. campestris* Br. (*Field W.*); leaves hairy, spikes dense somewhat umbellate or contracted into a rounded lobed head, leaflets of the perianth acuminate longer than the obtuse apiculate capsule, seeds with a short conical stalk-like appendage at the base. *Juncus L.* —  $\alpha$ . filaments about 6 times shorter than the anther, seeds nearly globose. *Juncus E. B.* t. 672. —  $\beta$ . taller, filaments from half as long to as long as the anther, seeds twice as long as broad. *L. congesta* Lej.: *E. B. S.* t. 2718. *L. multiflora* Koch.

Woods and dry pastures, frequent;  $\alpha$ . and  $\beta$ . growing together. 4. 4, 5. — Stem 4—6 or 8 inches, or even 1 foot or more high. Flowers collected into ovate or oblong; nearly erect spikes, of a reddish-brown colour, sometimes very pale. In  $\beta$ . the spikes are often nearly all sessile. De Candolle, whom Smith quotes as the authority for considering this a distinct species, himself now, in the *Bot. Gallicon*, makes it a var. of *campestris*; indeed we find various intermediate states. Even the *L. Sudetica* of DC. will probably prove not permanently distinct from *campestris*. All of them are united by Kunth, En. iii. p. 308.

5. *L. arcuata* Hook. (*curved Mountain W.*); leaves channelled hairy, panicle subumbellate of few 3—5-flowered heads with long drooping peduncles, bractees membranous fringed, capsule ovate-globose apiculate shorter than the broadly lanceolate mucronate-aristate sepals, filaments as long as the anthers. *E. B. S.* t. 2688.

On the barren stony summits of the great Cairngorm range of mountains. Upon Fonniven, a high mountain in Sutherland, and in Assynt. 4. 7. — The smallest of our *Luzulae* and one of the rarest and most distinct. It comes nearer Mr. Brown's *L. hyperborea* than any other, but that wants the curved peduncles. Seeds without any appendage at the top, and with scarcely any at the base.

6. *L. spicata* DC. (*spiked Mountain W.*); leaves somewhat channelled, spike solitary drooping compound, spikelets shorter than their subdiaphanous mucronated bractees, sepals narrow mucronate-aristate about as long as the rounded apiculate

capsule, filaments nearly as long as the anthers. *Juncus* L.: *E. B.* t. 1176.

High mountains in the north of England, and more abundantly in Scotland. 4. 7. — *Stem* 6—8 inches high, slender. *Leaves* small, narrow, hairy only at the margins of the *sheaths*. *Spike* dark-coloured, interrupted near the base. *Capsule* very dark, shining brown. Well distinguished by its drooping compound spike and narrow leaves.

### 3. NARTHÉCIUM Huds. Bog-Asphodel.

*Perianth* petaloid, of 6 linear-lanceolate, spreading, at length connivent sepals. *Stam.* woolly. *Germen* pyramidal. *Stigma* entire. *Caps.* 3-celled, at the base 3-valved. *Seeds* numerous, with an appendage at each extremity. — Named from *ναρθήξ*, a rod; probably from the elongated straight raceme of flowers. It is remarkable that this word is an anagram of *Anthericum*, a genus with which Linnæus had united it.

1. *N. ossifragum* Huds. (*Lancashire B.*); leaves linear uniform, pedicels with bractæas above the middle, stamens much shorter than the perianth. *E. B.* t. 535.

Wet places, in moors and mountains, frequent. 4. 7, 8. — *Stem* 6—8 inches high, decumbent at the base. *Roots* creeping. *Leaves* all radical, uniform, equitant, striated, about  $\frac{1}{2}$  as long as the *scape*, which has many scales or bractæas. *Stamens* considerably shorter than the *perianth*. *Seeds* with a very long *arillus* forming an appendage to each extremity, attached to a longitudinal receptacle on each valve: the *receptacles* form the dissepiments.

\*\* *Perianth* conspicuous; three inner or all the sepals much developed and petaloid. *Albumen* wanting. *Aquatic* or marshy plants with the nerves of the leaves longitudinal. (ORD. XCVIII. XCLIX.)

### ORD. XCVIII. BUTOMACEÆ Rich.

*Perianth* of 6 pieces, the 3 inner petaloid. *Stamens* definite or indefinite, hypogynous. *Ovaries* 3 or 6, or more, superior, distinct or united. *Ovules* numerous in each cell or carpel. *Stigmas* as many, simple. *Follicles* several, either distinct and rostrate, or united into one. *Seeds* minute, numerous, attached to a reticulated receptacle, covering the whole inner surface of the cell. *Albumen* 0. — *Aquatics*. *Leaves* very cellular. *Flowers* umbellate; handsome.

#### 1. BÚTOMUS Linn. Flowering-rush.

*Perianth* single, coloured, 6-partite, inferior. *Capsules* 6, many-seeded. *Seeds* fixed to the inner lining of the capsule. —



Named from *βους*, an ox, and *τεμνω*, to cut; because the sharp leaves injure the mouths of cattle that browse upon them.

1. *B. umbellatus* L. (common F.); leaves linear-subulate trigonous, spatha of 3 leaves. *E. B.* t. 651.

Ditches and ponds, frequent in England and Ireland. Duddingston Loch, and Loch of Clunie, Scotland, but only where it has been planted. 4. 6, 7. — *Root* white, tuberous. *Leaves* all radical, 2—3 feet long, linear, acuminate, acutely trigonous, more or less spirally twisted at the extremity. *Scape* longer than the leaves, rounded. *Umbel* of many rose-coloured flowers, on pedicels about 4 inches long, with scarioso sheathing bractæ at the base, and these having a triphyllous membranous spatha or involucre beneath them. *Germens* ovate, compressed. *Style* about as long as the germen, with a recurved cleft stigma. *Seeds* parietal, or fixed to the inner surface of the pericarp, extremely small. A highly ornamental plant.

#### ORD. XCIX. ALISMACEÆ R. Brown.\*

*Perianth* of 6 pieces; 3 outer sepals herbaceous, 3 inner petaloid. *Stamens* hypogynous. *Ovaries* several, superior, distinct or slightly united at the base, each 1-celled. *Ovules* solitary, or 2 superposed, attached to the inner angle of the carpel. *Pericarps* indehiscent. *Seeds* solitary, or 2 attached to the suture at a distance from each other, erect or ascending. *Albumen* 0. *Embryo* undivided, curved like a horse-shoe, with the same direction as the seed.—Aquatics. Leaves radical on long stalks.

1. ACTINOCARPUS. Flowers perfect. Stam 6. Carpels 6—8, spreading, each 2-seeded.
2. ALISMA. Flowers perfect. Stam. 6. Carpels numerous, each 1-seeded.
3. SAGITTARIA. Flowers monœcious. Stam. numerous. Carpels numerous, each 1-seeded.

##### 1. ACTINOCÁRPUS Br. Star-fruit.

*Flowers* perfect. *Stamens* 6. *Styles* 6—8. *Capsules* indehiscent, combined at the base, spreading in a radiated manner, 2-seeded.—Named from *ακτω*, a ray, and *καρπος*, a fruit; in reference to its curiously radiated fruit, resembling a star-fish.

1. *A. Damasónium* Br. (common S.); capsules 6-subulate compressed opening longitudinally, leaves 5-nerved. *Alisma Damasónium* L.: *E. B.* t. 1615.

Ditches and pools, mostly on a gravelly soil, and chiefly in the middle and south-eastern counties of England. 4. 6, 7. — *Leaves* radical, on long petioles, floating, elliptical. *Scapes* with a terminal

*umbel*, generally *proliferous*. *Petals* white, very delicate, *obcordate*, each having a yellow spot at the base. *Capsules* with two seeds upon evident stalks, one from the upper angle, horizontal, the other from the lower angle of the axis, erect, oblong, tubercled, and transversely striated, compressed, with a deep furrow on each side, occasioned by the form of the *embryo* within, which is cylindrical, and bent double, somewhat like a horse-shoe.

## 2. *ALISMA* Linn. Water-Plantain.

*Flowers* perfect. *Stamens* 6. *Styles* numerous. *Achenes* many in a *head*, distinct, one-seeded. — Named from *alis*, water, in Celtic. The genus is altogether aquatic.

1. *A. Plantago* L. (*greater Water-Plantain*); leaves all radical cordate-ovate or lanceolate, scape paniced with whorled compound branches, fruit depressed, achenes obtuse with a small rib on the back. — *α*. leaves broader more or less ovate. *E. B. t.* 837. — *β*. leaves lanceolate tapering below. *A. lanceolata* With.

Near the margins of lakes, rivers, and ditches, frequent. *γ*. 6—8. *Plant* 2—3 feet high. *Leaves* on long stalks. *Scape* branched upwards; *branches* bracteated; *flowers* of a pale rose-colour.

2. *A. natans* L. (*floating Water-Plantain*); radical leaves linear acuminate sessile, floating ones elliptical obtuse, stem floating and rooting leafy, peduncles simple from the joints of the stem. *E. B. t.* 775.

Lakes in North Wales and Cumberland. Very rare in Scotland: Black Loch, 6 miles from Stranraer. On Howth and in Cunnamara, Ireland. *γ*. 7, 8. — At the base of the plant are long, linear-lanceolate, membranous *scales*, or *root-leaves* reduced to mere *petioles*. *Stem-leaves* floating, on long stalks, scarcely nerved. *Achenes* obliquely oblong, compressed at the side, with many *striæ*, slightly spreading, pointed with the short persistent *style*.

3. *A. ranunculoides* L. (*lesser W.*); leaves all radical linear-lanceolate, scape with simple branches in 1 or 2 whorls, fruit globose squarrose, achenes obliquely ovate acute 5-angled. — *α*. erect. *E. B. t.* 326. — *β*. plant procumbent, umbels rooting and leafy. *A. repens* "*Davies Welsh Bot.* 36;" *E. B. S. t.* 2722.

Ditches and turfy bogs, not unfrequent in England, Scotland, and Ireland. — *β*. In lakes, North Wales. *γ*. 5—9. — "Entire plant diffusing when bruised the odour of *Eryngium fatidum*, but weaker." *Bronf.* In general appearance most allied to *A. Plantago*, especially the narrow-leaved variety of that plant, but much smaller, with larger *flowers*, which are pale-coloured, and arranged in often *proliferous umbels*. The most essential character is to be found in the *germen* and *fruit*. The *var. β*. at first appears to be very different, having runners, and the flowers are solitary on long simple

radical peduncles; but these runners are the true scapes, the umbels having taken root, and thrown out a few leaves.

### 3. *SAGITTARIA* Linn. Arrow-head.

Monœcious.—*Barren fl.* Stam. numerous.—*Fertile fl.* Styles many. *Achenes* very numerous, distinct, collected into a head, 1-seeded, compressed, margined.—Named from *sagitta*, an arrow, on account of the shape of its leaves.

1. *S. sagittifolia* L. (*common A.*); leaves arrow-shaped, the lobes lanceolate straight, scapes simple with whorled simple short branches. *E. B.* t. 84.

Ditches and margins of rivers in England and Ireland. 4. 7—9. —A beautiful aquatic, with large, truly arrow-shaped leaves, rising above the surface of the water.

\*\*\* *Perianth none or inconspicuous. Nerves of leaves usually longitudinal.* (Ord. C.—CV.)

† *Plants sometimes, though rarely, aquatic, never (except Sparganium natans) submerged or floating.* (Ord. C.—CIII.)

## ORD. C. JUNCAGINACEÆ Rich.<sup>1</sup>

*Flowers* perfect, lower ones or all stalked or reflexed. *Perianth* uniform, rarely none, sometimes coloured but scarcely petaloid. *Stamens* hypogynous. *Anthers* turned outwards. *Ovaries* superior, united or distinct. *Ovules* solitary or two, approximated at the base, erect. *Styles* or *stigmas* 3—6. *Pericarps* indehiscent or 2-valved. *Embryo* without (or? very rarely in the axis of mealy) *albumen*, having the same direction as the seed, with a lateral cleft for the emission of the *plumule*.—Marsh Herbs, with narrow radical leaves. Flowers spiked or racemed.

1. *TRIGLOCHIN*. *Anthers* sessile. *Ovary* 1, 3—6-celled. *Flowers* in a straight naked spike or raceme.
2. *SCHUCHZERIA*. *Anthers* on a filament. *Ovaries* 3. *Flowers* in a flexuose bracteate raceme.

### 1. *TRIGLOCHIN* Linn. Arrow-grass.

*Perianth* of 6, erect, concave, deciduous leaves, 3 outer, and 3 inner inserted a little higher than the others. *Stamens* 6.

<sup>1</sup> This Order, small though it be, requires revision as to its limits, and ought perhaps to be confined to *Triglochin* and *Tetroncium*, in which case the spur-fruited species of *Triglochin* may form a third genus. The Order might then be called *Triglochinaceæ*, and the name *Juncaginaceæ* be abolished as liable to be confounded in sound with *Juncaceæ*.

*Ovaries* 3—6-celled. *Stigmas* 3—6, sessile, plumose. *Anthers* sessile, lodged in the leaves of the *perianth*. *Capsules* 3—6, 1-seeded, united by a longitudinal *receptacle*, from which they usually separate at the base. *Albumen* 0.—Flowers in a *naked straight spike or raceme*.—Named from *τρεῖς, three*, and *γλῶχις, a point*; from the three points of the capsules.

1. *T. palustre* L. (*Marsh A.*); fruit 3-celled nearly linear. *E. B. t.* 366.

Wet meadows, and by the sides of rivers and ditches in marshy situations, plentiful. *℥.* 6—8.—*Leaves* all radical, linear, fleshy, slightly grooved on the upper side, sheathing and membranous at the base. *Scape* 8—10 inches high, terminating in a lax, simple *spike* or *raceme*. *Flowers* small, greenish. *Capsules* 3, linear, united by a common receptacle, so as to form a solitary 3-celled fruit, each cell separating at its base, and suspended by the extremity, containing one seed, and not dehiscent.—Mr. W. Wilson finds that the leaves, when bruised, yield a very fetid smell, and that the root, under certain circumstances at least, is a creeping one, sending out jointed scaly runners, with comparatively large, ovate, shortly acuminate *bulbs* at the extremity. These bulbs, at the end of the jointed runners, have very much the appearance of a scorpion's tail.

2. *T. maritimum* L. (*Sea-side A.*); fruit 6-celled ovate. *E. B. t.* 255.

Salt-marshes, not unfrequent. *℥.* 5—9.—Larger than the last and stouter, differing essentially in its fructification, which is formed of 6 combined capsules, constituting a broadly ovate fruit, not separating from the base and suspended by their summits, as in *T. palustre*. Even when in flower, the same form is observable in the germen as afterwards in the fruit.

## 2. SCHEUCHZERIA Linn. Scheuchzeria.

*Perianth* single, somewhat petaloid, of 6 reflexed leaves; the inner ones narrower. *Stamens* 6. *Filaments* slender. *Anthers* erect, elongated. *Ovaries* 3. *Stigmas* sessile, papillose. *Capsules* 3, inflated, 2-valved, 1—2-seeded. *Albumen* 0.—Flowers *racemed with a bractea at the base of their stalks*.—Named in honour of the three *Scheuchzers*, Swiss botanists.

1. *S. palustris* L. (*Marsh S.*). *E. B. t.* 1801.

In a marsh at Lakeby Car, near Boroughbridge; Thorne Moor, near Doncaster; Bomerepool, near Shrewsbury. Methven, near Perth. *℥.* 7.—A singular and very rare plant, having few, semi-cylindrical, slender, rush-like leaves; and a *scape* with large *bracteas*, terminated by a *raceme* of greenish flowers. *Perianth* and *stamens* reflexed. *Germens* 3, ovate, obtuse, with lateral, linear, downy *stigmas*. *Capsules* singularly inflated.

## ORD. CI. TYPHACEÆ Juss.

*Flowers* monœcious, numerous and very closely arranged upon a cylindrical or spherical *spadix* without a *spatha*. *Perianth* of 3 or more mere scales, or wanting and replaced by hairs. *Barren fl.* *Stamens* 1—6\*. *Filaments* capillary, distinct or united. *Anthers* erect.—*Fertile fl.* *Ovary* solitary, superior, 1-celled, containing one solitary pendulous *ovule*. *Style* short. *Stigma* simple, unilateral. *Fruit* somewhat dry or spongy, drupaceous, indehiscent, 1-celled, at length angular by mutual pressure. *Seed* solitary, pendulous, with a membranous skin adhering to the pericarp. *Embryo* in the axis of mealy *albumen*, straight, with a cleft on one side containing the *plumule*. *Radicle* next the *hilum*.—Herbaceous plants, growing in marshes or ditches. Stems without nodes. Leaves rigid, ensiform, with parallel veins.

1. TYPHA. Spadix cylindrical.

2. SPARGANIUM. Spadix spherical.

## 1. TÝPHA Linn. Cat's-tail, or Reed-mace.

*Spadix* cylindrical. *Perianth* 0, except hairs.—*Barren fl.* *Stam.* 1, or 2—6 and monadelphous, surrounded at the base with 3 or more hairs (sterile filaments?): *anthers* somewhat wedge-shaped.—*Fertile fl.* *Pericarp* stalked; the stalk with hairs, either whorled or at its base (sterile filaments?).—Named from *τύφος*, a marsh, where these plants grow.

1. *T. latifolia* L. (*great R.*); leaves linear nearly plane glaucous, sterile and fertile spikes continuous, both cylindrical. *E. B. t.* 1455.

Borders of ponds and lakes. 2. 7, 8.—*Stems* 3—6 feet high. *Leaves* very long, sometimes nearly an inch broad. *Spikes* very long, close together; *fertile one* greenish-brown; *sterile one* yellow, with one or two large membranaceous bractæas.

2. *T. angustifolia* L. (*lesser R.*); leaves linear grooved below green, sterile and fertile spikes a little distant from each other both cylindrical. *E. B. t.* 1456.

Pools and ditches, less frequent than the preceding. About London; not uncommon in the E. of England, as Norfolk, Suffolk, and Essex. Loch of Lindore, Fife. 2. 7.—Smaller than the last, with much narrower leaves and catkins. What is called *T. elatior* on the Continent is however somewhat intermediate in these respects, and the leaves are grooved only at the base; they are green, as in *T. angustifolia*; its spikes are sometimes contiguous, sometimes separate. Allied to these, if distinct, is *T. media* DC., strangely confounded by some with the next: it has the habit and spikes of *T. angustifolia*; leaves

linear, quite plane, a little glaucous, but only half the length of the stem, while in all the preceding the leaves are rather longer than the stem.

3. *T. minor* Sm. (*dwarf R.*); leaves linear setaceous, barren and fertile spikes distant or contiguous the latter elliptical. *E. B. t.* 1457. *T. minima* Willd. *T. angustifolia* β. Linn.

Said, by Dillenius, to have been found by Mr. Dandridge on Hounslow Heath. Marl pit north of Little Crosby, Lancashire, 1801. 4. 7. — Respecting the Lancashire station *vide* Hall's Flora of Liverpool, p. 88, for particulars. "I have a distinct recollection of having seen specimens of this plant some years ago at the Linnæan Society, which the late Mr. David Don gathered somewhere, I think, in Kent."—Dr. Bromfield.

## 2. SPARGANIUM Linn. Bur-reed.

*Spadix* spherical. *Perianth* of 3 scales, which are broader upwards (sterile stamens?).—*Barren fl.* *Stamens* 3, distinct or nearly so: *anthers* ovate.—*Fertile fl.* *Pericarp* sessile.—Name: σπαργανον, a little band, from its narrow and long leaves.

1. *S. ramosum* Huds. (*branched B.*); leaves triangular at the base their sides concave, common flowerstalk branched, stigma linear. *E. B. t.* 744. *S. erectum* L.

Banks of ditches, lakes and stagnant waters. 4. 7. — *Stem* 2 feet and more high, with a few, long, sword-shaped leaves or bractæ, having broad membranous sheathing bases on the upper or branching part. *Root-leaves* very long, linear, ensiform, triangular at the base, their sides concave. *Lower branches* of the inflorescence with several rather distant heads, of which 1—3 of the lower ones are composed of fertile, the others of sterile flowers.

2. *S. simplex* Huds. (*unbranched upright B.*); leaves triangular at the base their sides flat, common flowerstalk simple, stigma linear. *E. B. t.* 745. *S. erectum* β. L.

Ditches and stagnant waters, especially in a gravelly soil. 4. 7. — Much smaller than the last. Common flowerstalk rarely, if at all, branched, the branches or flowerstalks bearing only a single head of fertile flowers; the other fertile heads and all the sterile ones are sessile. The sides of the leaves are plane, not concave or grooved; the flowers pale yellow.

3. *S. natans* L. (*floating B.*); leaves floating plane, common flowerstalk simple, stigma ovate very short, head of sterile flowers mostly solitary. *E. B. t.* 273.

Lakes, ditches, and stagnant waters; abundant in the north. 4. 7. — *Leaves* very long, linear, pellucid.

## ORD. CII. ARACEÆ Juss.

*Flowers* monœcious, numerous, collected upon a *spadix*, which is generally enclosed within a 1-leaved *spatha*; barren and fer-

tile ones usually on different parts of the spadix, sometimes intermingled. *Perianth* wanting. *Stamens* usually indefinite. *Anthers* turned outwards, nearly sessile or on flat *filaments*, usually 2-celled, sometimes 1-celled, sometimes 4- or many-celled two or more being united. — *Fertile fl. Ovary* free, with 1 or rarely more cells, sessile, solitary or aggregated. *Ovules* solitary or several together, erect, horizontal, or pendulous. *Stigma* sessile or nearly so. *Fruit* succulent. *Seeds* pulpy. *Embryo* usually with a contrary direction to the seed, in the axis of fleshy or mealy (rarely without) *albumen*, straight, with a cleft on its side for the emission of the *plumule*. *Radicle* usually at the opposite extremity from the *hilum*, rarely pointing to it. — Leaves *sheathing at the base, convolute in aestivation, sometimes compound, often cordate, usually with branching veins*. — Acriid and poisonous; but if the juice is dissipated by heat, or extracted by pressure, the leaves and roots become esculent; and the fecula of the latter is capable of being converted into excellent bread. Thus the *Colocasia esculenta*, and its allied species, are abundantly eaten in warm countries.

### 1. *A'rum* Linn. Cuckow-pint.

*Spatha* convolute at the base. *Spadix* with the fertile flowers at the base. *Stam.* (sessile) near the middle of the *spadix*, which is naked above. *Ovules* 2—6 in each *carpel*, horizontal. *Stigma* sessile, somewhat excentric. *Berry* with 1 cell and 1 or few seeds. *Embryo* at the opposite extremity of the seed from the *hilum*. — Name *apov*, in Greek, probably from *ar* or *aur*, in Hebrew and various old languages, denoting *fire*, on account of the fiery or acrid taste.

1. *A. maculatum* L. (*Cuckow-pint* or *Wake-Robin*); leaves all radical hastato-sagittate, lobes deflexed, spadix club-shaped obtuse shorter than the *spatha*. *E. B. t.* 1298.

Groves and hedges, frequent in England; rare in Scotland and Ireland. 4. 4, 5. — *Root* a tuber, affording an abundant amylaceous substance, which, if properly prepared and its acrid juice expressed, proves an excellent substitute for bread-flour, and is sold for that purpose in great quantities at Weymouth and in Portland Island. *Leaves* large, shining, often spotted with black. *Spatha* large, convolute. Above the *germens*, on the *spadix*, is a ring or circle of 2-celled, sessile *anthers*, and above them another ring of apparently imperfect *germens*. The extremity of the *spadix* is purplish. *Berries* persistent during winter, after the leaves and *spadix* have decayed, crowded into an oblong spike of a bright scarlet colour.

### ORD. CIII. ORONTIACEÆ R. Brown. Lindl.

*Flowers* perfect, crowded on a simple thick *spadix*, usually

furnished with a *spatha*. *Perianth* of 4—8 scales. *Stamens* hypogynous or perigynous, of the same number as the scales of the perianth. *Filaments* flattened or filiform. *Anthers* 2-celled, opening longitudinally or transversely. *Ovary* free, with 1 or more cells. *Ovules* erect or pendulous. *Style* wanting or subulate. *Stigma* capitate. *Fruit* baccate. *Embryo* slit on one side, usually in the axis of *albumen*. — Herbaceous plants, with broad, entire or deeply divided, never floating leaves which are sometimes sword-shaped and equitant. — This Order has been separated by Dr. Lindley from the last, and is considered by him to be much more allied to the *Juncaceæ*, on account of the stamens and pistils being mixed on the spadix: we have however slightly altered the character so as only to include those in which the presence of a perianth enables one to ascertain positively that the stamens are actually in the same flowers with the pistil.

### 1. A'CORUS Linn. Sweet-Sedge.

*Flowers* arranged upon a sessile *spadix*. *Spatha* a mere continuation of the scape and similar to the leaves (not convolute). *Perianth* of 6 pieces or scales, inferior. *Ovary* 3-celled. *Stigma* sessile. *Fruit* baccate, indehiscent, few-seeded. — Named from  $\alpha$ , out, and  $\kappa\omicron\pi\iota\nu$ , or  $\kappa\omicron\pi\eta$ , the pupil of the eye, the diseases of which it was supposed to remove.

1. A. *Calamus* L. (common S.); *Style* ancipitate prolonged into a leaf above the spadix. *E. B.* t. 156.

Watery places on the banks of rivers, in the middle and south-eastern counties of England, abundant in Norfolk and Suffolk. Rare if truly indigenous in Scotland; water of Girvan, near the town, and bog of Culzean near Maybole, Ayrshire; Castle Semple Loch, Renfrewshire. 4. 6. — *Root* aromatic. *Scape*, like the leaves, ensiform-ancipitate. The agreeable scent of this plant has recommended it for garlands, and for strewing on the floor of the cathedral at Norwich on festival-days.

†† *Submerged or floating plants.* (Ord. CIV. CV.)

### ORD. CIV. PISTIACEÆ Rich.

*Perianth* 0. *Flowers* 2, monœcious, enclosed in a *spatha*, but not borne on a spadix. — *Sterile fl.* solitary. *Stamens* 1—2 and distinct, or the *filaments* united, thick, and bearing 3—8 *anthers*. — *Fertile fl.* solitary. *Ovary* 1-celled, with 1 or more erect or horizontal *ovules*. *Style* short. *Stigma* simple. *Fruit* somewhat membranaceous and indehiscent, or bursting transversely, or baccate, 1- or more-seeded. *Seeds* with a coriaceous thick ribbed skin, and a thickened indurated *foramen*. *Embryo*



either in the axis of a fleshy *albumen* and having a lateral cleft for the emission of the *plumule*, or at the apex of the *nucleus*. *Radicle* at the opposite extremity from the *hilum*. — Floating frondose plants, minute and usually lenticular, or with large lobed fronds.

### 1. *LEMNA* Linn. Duckweed.

*Spatha* membranaceous, urceolate. *Stam.* 1—2, distinct, each bearing a 2-celled didymous anther (the cells bilocular?). *Fruit* utricular. — Fronds without distinct stem or leaves, floating on the surface of the water, and increasing, not only by seeds, but, far more abundantly, by gemmæ or buds, concealed in lateral clefts of the parent frond, which, growing out on 2 opposite sides into new plants, and these again producing offspring in the same way, while still attached to their parent, present a most curious appearance. — Name: *λεμνα*, of the Greeks, it is said from *λεμνις*, a scale.

1. *L. trisulca* L. (*Ivy-leaved D.*); fronds thin elliptic-lanceolate caudate at one extremity, at the other serrated, roots solitary. *E. B. t.* 926.

Clear stagnant waters. Less frequent in Scotland than in England. ☉. 6, 7. — Fronds  $\frac{1}{2}$ — $\frac{3}{4}$  of an inch in length, pellucid at the margins, reticulated. Roots solitary, tipped at the extremity (as are those of the rare and beautiful aquatic, *Pontederia azurea*) with a small sheath. Stamens 2. Ovary with a single ovule. Seed solitary, transverse, attached by a short stalk to the bottom of the utricle.

2. *L. minor* L. (*lesser D.*); fronds nearly ovate compressed, roots solitary. *E. B. t.* 1095.

Stagnant waters, common. ☉. 7. — About a line or a line and a half long, of a rather thick and succulent, but compact texture, slightly convex beneath. This is the most abundant of all the species, covering the surface of ditches and harbouring numerous insects and molluscæ, the food of ducks and other waterfowl, whence the English name of *Duckweed*. The young fronds constitute the *Lemna arhiza* of the French authors. Stamens 2. Ovary 1-ovuled. The utricle is single-seeded; seed transverse, with its hilum "directed towards the narrow end of the frond:" *Wilson*.

3. *L. polyrrhiza* L. (*greater D.*); fronds obovate-rotundate compressed, roots numerous from the same point. *E. B. t.* 2458. *Spirodela* *Schleid.*

Stagnant waters. Flowers unknown in Britain. ☉.—The largest of all the species, half an inch long and nearly as broad, succulent, firm, faintly striated, a little convex below, where, and at the margin above, the frond is of a deep purple colour. Spiral vessels are conspicuous throughout the whole plant; but in all the other species there are either none, or they are evanescent. Roots numerous from a central point. Stamens 2; filaments tapering below. Ovary with 2 erect ovules. The fructification of this species has not been observed.

4. *L. gibba* L. (*gibbous D.*); fronds obovate nearly plane

above, hemispherical beneath. *E. B. t.* 1233. Telmatophacæ *Schleid.*

Stagnant water, but not very frequent. Rare in Scotland. ☉. 6—9. — Size of *L. minor*, but readily distinguished by its gibbous or even hemispherical lower surface, which is, moreover, white, pellucid, and beautifully cellular, upper side plane, green, opaque. *Stamens* 2. *Ovary* with 2—7 erect ovules. *Utricle* at length bursting transversely. *Seeds* usually 2—4, rarely more or solitary, erect.

### ORD. CV. NAIADACEÆ *Juss.*

Flowers perfect<sup>1</sup> and all sessile, or imperfect and monœcious or diœcious. *Perianth*? of the perfect *fl.* of 3—4 wedge-shaped or clawed scales, or wanting; of the imperfect ones usually wanting, sometimes of 1—2 scales. *Stamens* definite, hypogynous. *Ovaries* solitary or several, 1-celled. *Ovules* usually solitary, erect or pendulous, rarely 3 and erect. *Style* simple, or more or less deeply 2—3-cleft. *Pericarps* dry, indehiscent, 1-celled, 1- (or rarely 2-) seeded. *Embryo* without *albumen*, with a thin skin, having a lateral cleft for the emission of the *plumule*. *Radicle* next the *hilum*, or at the opposite extremity of the seed. — *Submerged or floating* aquatics, with very cellular leaves and stems. Flowers inconspicuous, sometimes spiked.

1. POTAMOGETON. Flowers perfect. *Perianth* of 4 unguiculate sepals. *Stamens* 4. *Carpels* 4, sessile. *Style* entire.
2. RUPPIA. Flowers perfect. *Perianth* 0. *Stamens* 4. *Carpels* 4, on long stalks. *Style* entire.
3. ZANNICHELLIA. Flowers imperfect, axillary. *Carpels* 4 or more, sessile. *Style* entire.
4. ZOSTERA. Flowers imperfect, arranged with a foliaceous spatha. *Carpels* sessile. *Style* bifid.

\* *Pollen* globose or oblong. *Plants* growing in fresh water, rarely in salt-marshes.

#### 1. POTAMOGETON *Linn.* Pond-weed.

*Flowers* perfect, sessile, upon a spike (or *spadix*?) which issues from a sheathing *bractea* (or *spatha*?). *Perianth* single, of 4 clawed scales. *Stamens* 4. *Anthers* sessile, opposite the

<sup>1</sup> We would gladly have adopted the opinion of Dr. Lindley by limiting this Order to those genera which had imperfect flowers; but we can scarcely remove *Ruppia*, *Potamogeton*, *Aponogeton*, and *Ouviranda* to the *Juncaginaceæ*. According, however, to the views of Decaisne, Kunth, and some others, the supposed sepals of these genera are merely bracteas, each stamen and carpel being a distinct flower; so that these plants have really all imperfect flowers, and are properly placed here. The perianth, if such it be, is sessile, on a kind of spadix or thickish peduncle: in the true *Juncaginaceæ* the lower flowers at least are stalked, preventing any ambiguity about the perianth or their being truly perfect.

scales of the perianth. *Pistils* 4, which become 4 sessile achenes. *Styles* and *stigmas* undivided. — Named from ποταμός, a river, and γειτὸν, a neighbour. All the species grow in the water, and often present as beautiful an appearance in clear streams and ponds, as the *Fuci* do in the ocean. They protect the spawn of fish, and harbour innumerable aquatic insects, their roots and seeds affording food to water-birds. Chamisso and Schlechtendal have well illustrated this genus. (See *Linnaea*, ii. p. 159.)

\* *Leaves all opposite and submerged; stipules none.*

1. *P. densus* L. (*opposite-leaved P.*); leaves crowded all opposite pellucid amplexicaul ovate-acuminate or lanceolate, spikes shortly stalked about 4-flowered finally reflexed. *E. B. t.* 397.

Ditches, frequent. 4. 6, 7. — *Peduncles* short. *Head of flowers* small, rounded. *Leaves* keeled below, middle nerve or rib of many longitudinal cells, with 2 and sometimes 3 lateral parallel veins on each side, the inner one the strongest.

\*\* *Leaves alternate, all submerged, with adnate stipules.*

2. *P. pectinatus* L. (*Fennel-leaved P.*); leaves distichous setaceous or linear 1—3-nerved sheathing by means of their adnate stipules, spike interrupted, achenes large 3-ribbed at the back, the two lateral ribs sometimes obsolete. — *α.* leaves setaceous 1-nerved canaliculate, achenes with the lateral keels conspicuous. *E. B. t.* 323. *P. marinus* L. — *β.* leaves broader 3-nerved flat, achenes with the lateral keels inconspicuous. *P. pectinatus var. vulgaris* Ch. and Schl. *P. zosteraceus* Bab.

Rivers, lakes, ponds, and salt-marshes. Near Ayr, Scotland. — *β.* Serpentine, Hyde Park, London. 4. 6, 7. — We think there can be no doubt that *P. zosteraceus* Bab. (whether of Fries, we have not materials to enable us to decide) is what Chamisso and Schlechtendal consider the common form of the species; for although in the specific character they say "leaves 1-nerved," they mention that the broad-leaved forms (2 lines broad) have an additional nerve near each margin. These authors describe the achenes with the lateral ribs or keels always obsolete, which certainly is not the case in our var. *α.*: this last is in habit not much unlike *Ruppia maritima*, and appears to us to unite the present to the next species. The keels or ridges can be sometimes only observed by cutting the achenes transversely.

3. *P. filiformis* Pers. (*slender-leaved P.*); leaves distichous setaceous 1-nerved sheathing by means of their adnate stipules, spike interrupted, achenes (small) rounded but not ribbed on the back. *Cham. and Schlecht. l. c.* p. 167.

Lakes and ponds. Forfarshire and Berwickshire. 4. 6, 7. — So similar to our var. *α.* of the last that we know no distinguishing character except the smaller flowers and fruit, and the achenes being quite rounded on the back after the cuticle has been removed: when

this is not removed, they sometimes appear 3-ribbed externally; Kunth (En. iii. p. 136) unites them.

\*\*\* *Leaves alternate, all linear, submerged; stipules free.*

4. *P. pusillus* L. (*small P.*); leaves narrow-linear 3—5-nerved with obscure connecting veins, peduncles 2—3 times longer than the somewhat lax spike, stem slightly compressed. —  $\alpha$ . leaves 3-nerved, nerves in the middle between the midrib and the margin. *E. B. t.* 215. —  $\beta$ . leaves broader with an accessory nerve on each side between the margin and the primary lateral ones. *P. compressus* L.: *E. B. t.* 418.

Ditches and still waters.  $\mathcal{A}$ . 7. — The stem is here, as in all of this division, more or less compressed. The leaves are more or less acute; the spikes oblong, compact or a little interrupted. We quite agree with Chamisso and Schlechtendal, who unite the *P. compressus* with *P. pusillus*.

5. *P. gramineus* L. (*grassy P.*); leaves broadly linear obtuse 3-nerved, with few and obscure connecting veins, peduncle scarcely longer than the oblong oval dense spike, stem slightly compressed. *E. B. t.* 2253. *P. obtusifolius* Mert. and Koch.

Ponds and ditches. Amberley, Sussex; Orford, near Warrington, Lancashire; Arbury Hall, Warwickshire; Deptford, Norwich, Yorkshire. Possil marsh, near Glasgow; Kincardineshire.  $\mathcal{A}$ . 7. — Nearly allied to the last, but stouter, darker-coloured, and with short peduncles, scarcely longer than the stipule of the leaf from the axil of which they spring. The middle nerve or rib<sup>3</sup> is accompanied by many parallel oblong reticulations both in this and the last species; but there are none of the numerous longitudinal parallel intermediate nerves seen in the two following. Occasionally the peduncles are nearly twice the length of the spike, when it becomes very difficult to distinguish this from var.  $\beta$ . of the last species, with which it agrees in general appearance; but we believe that the latter has always the two supplementary nerves, whereas *P. gramineus* has the leaves only 3-nerved. Judging from the specimens we have seen in herbaria, *P. gramineus* is more common than *P. pusillus*  $\beta$ ., while *P. pusillus*  $\alpha$ . is more common than either of the others.

6. *P. acutifolius* Link. (*sharp-leaved P.*); stem compressed, leaves linear acuminate with 3 principal and numerous close parallel intermediate nerves occupying the whole surface, spikes oval compact about equalling in length the short peduncle. Hook. in *E. B. S. t.* 2609.

Rare? Hitherto only found in marsh-ditches at Amberley, Henfield, and Lewes, Sussex.  $\mathcal{A}$ . 7. — The numerous, closely placed, parallel nerves well distinguish this and the following species from their congeners.

7. *P. zosterifolius* Schum. (*Grass-wrack-like P.*); stems compressed, leaves broadly linear acute with 3 principal and

numerous close parallel intermediate nerves occupying the whole surface, spikes cylindrical upon long peduncles. *E. B. t.* 2685. *P. cuspidatus* Schrad.: *E. Fl.* v. i. p. 234.

Rare? Rivulet at Hovingham, Yorkshire. Lakes of Rescobie and Forfar. *Æ.* 7. — Larger than the last, with peduncles 3—4 inches long, and spikes cylindrical, an inch in length.

\*\*\*\* *Leaves alternate, ovate, lanceolate or oblong, all pellucid and submerged; stipules free.*

8. *P. crispus* L. (*curly P.*); stem compressed, leaves lanceolate waved and serrated 3-nerved sessile, fruit beaked. *E. B. t.* 1012.

Ditches and rivers, frequent. *Æ.* 6, 7. — Peduncles elongated, not thickened upwards.

9. *P. perfoliatus* L. (*perfoliate P.*); leaves cordate-ovate sessile and amplexicaul 7-nerved with smaller intermediate nerves. *E. B. t.* 168.

Ditches and lakes, frequent. *Æ.* 7. — Peduncles rather short, thick, not swollen upwards. Spikes oblong-ovate.

10. *P. prælongus* Wulf. (*long-stalked P.*); leaves entire narrow-oblong semiamplexicaul obtuse and cymbiform at the end, with 3 principal and several lesser parallel nerves arising from the base connected by reticulations, stipules not winged, peduncles elongated, spikes cylindrical many-flowered. *E. B. S. t.* 2858.

Lakes and pools. Ditch by Caversham bridge, near Reading. Berwickshire; Moss of Litie, Nairnshire; Lochleven, Kinross-shire. *Æ.* 7. — This is best distinguished by its oblong (by no means elliptical) leaves, nerved from the base, where they are semiamplexicaul, and by the lengthened peduncle, which is sometimes slightly thickened upwards. In size it almost equals *P. lucens*. Stipules large, lower ones sometimes 3 inches long, white tinged with red, not green, and without the crests or wings observable in the two next.

11. *P. longifolius* Gay (*long-leaved P.*); leaves entire all elongato-lanceolate nearly sessile but attenuate below apiculate and flat at the end, stipules winged, spike with a few subverticillate distant flowers, peduncle very long thickened upwards. *E. B. S. t.* 2847

Lough Corrib, Galway, Ireland. *Æ.* 7, 8. — "Nearly allied to *P. prælongus*, but has not the amplexicaul and hood-tipped leaves of that plant; *Bab.* Chamisso and Schlechtendal do not consider it any way distinct from the next: in both the stipules are green, with two prominent wings or crests on the back. Mr. Borrer informs us that the Rydal Water plant is *P. heterophyllus*.

12. *P. lucens* L. (*shining P.*); leaves stalked elliptic-lanceolate mucronate denticulate flat, with several opposite pairs of parallel

nerves springing from the midrib connected by reticulations, stipules winged, spikes cylindrical many-flowered. *E. B. t.* 376.

Lakes, pools, and streams, abundant. *¶.* 6, 7. — The largest of our species, and very beautiful in the nervation of its leaves. Chamisso and Schlechtendal include it in a division of the genus which has sometimes floating and coriaceous leaves (*folia accessoria*) (as it is found by *Mr. Wilson* at Llyn Maclog): they change its name to *P. Proteus*, and consider the *P. heterophyllus* a variety of it. To us they appear distinct; but aquatic plants of all kinds are extremely liable to vary. *Stipules* large, with two prominent wings at the back. *Stem* thinner than the lower part of the peduncle, which is thickened upwards, and about the same length as the spike. *Spikes* cylindrical, 2 inches long. *Nerve* prominent on both sides of the leaf. *Upper leaves* smaller than the lower ones, and all suddenly contracted towards the point. — Coriaceous leaves rare, ovato-lanceolate, moderately acute, less evidently stalked than in *P. heterophyllus*; foliage more crowded and stipules larger and (in proportion) narrower than in that species. *Spikes* twice as long. *Wilson*.

\*\*\*\* *Leaves alternate, upper ones floating, broader than the rest; stipules free.*

13. *P. heterophyllus* Schreb. (*various-leaved P.*); submerged leaves sessile lanceolate attenuated at both ends apiculate denticulate or entire membranaceous, floating ones elliptical stalked slightly coriaceous, stipules strongly ribbed, peduncles thickened upwards. *E. B. t.* 1285.

Pools and ditches, in various parts of the country. *¶.* 6, 7. — *Mr. Wilson* finds this sometimes without floating leaves, when it seems intermediate between *P. lanceolatus* and *P. rufescens*. "The stipules, which are not dorsally winged, are short and broad, yet with 2 stout principal ribs, ovate and blunt; both they, and the leaves subtending the flower-stalk, are widely spreading. Leaves distantly inserted on the stem; upper ones considerably larger than the rest. — Distinguished by these marks, and the clavate flower-stalk, from *P. rufescens* and *lanceolatus*." *Wilson*. *Wahlenberg*, *Hartmann*, and *Fries* are of opinion that this is the true *P. gramineus* of *Linnaeus*; but *Linnaeus* adopted that name from *Ray*, and *Ray's P. gramineus* is the species commonly so called in this country.

14. *P. lanceolatus* Sm. (*lanceolate P.*); submerged leaves lanceolate "not apiculate" tapering at the base entire membranaceous with about 5—7 nerves and transverse veins, floating leaves elliptic-lanceolate subcoriaceous many-nerved petiolate, peduncle about as long as the leaves not thickened upwards, spikes elliptical. — *β.* floating leaves none. *P. lanceolatus L. B. t.* 1285.

Pools and ditches. — *α.* and *β.* growing together in a rivulet in Anglesea. Angus-shire; Kincardineshire; in the Lossie, by Elgin. *¶.* 7. — This plant had been very little understood till *Mr. Wilson* found it growing in a small rivulet in Anglesea, having a moderately swift stream. Floating leaves are always found where the current is

slow. Small chain-like reticulations are distinguishable near the midrib on the submerged leaves, but not on the floating leaves, which are elegantly overspread by them : " *Wilson in litt.* This remark is quite correct, and the portion of chain-like reticulations increases gradually upwards. The difficulty is now to distinguish this plant from the preceding, than which, however, it is much smaller and more delicate in all its parts. Sir J. E. Smith considered the *P. setaceus* of Linn. and Huds. and *Fl. Brit.* to be probably the same as the present, which can hardly be correct.

15. *P. rufescens* Schrad. (*reddish P.*); submerged leaves lanceolate attenuated at both ends "not apiculate" entire membranaceous many-nerved with connecting veins and many linear reticulations at the midrib, floating ones subcoriaceous oblong or obovate rather longer than their stalks, stipules not winged, peduncles not thickened upwards. *P. fluitans* *E. B.* t. 1286.

Ditches and slow streams, in many parts of England. Anglesea. Near Glasgow and Forfar; in the Gaddie, at Premnay, Aberdeenshire.

21. 7. — "This does, in some situations, much resemble *P. lucens*. The coriaceous floating leaves are nearly as acute as the lower ones, differing only in their firmer texture and in being stalked; the ribs, shape, and size are nearly alike in both. The lateral ribs or nerves are by no means separate to the base of the leaf, but arise from various parts of the central rib, some of them one third the length of the leaf from its base; they are from 6—7 in number on each side, 2 of them more evident than the rest: flower-stalk not thickened upwards : " *Wilson in litt.* The plant is remarkable for its reddish-olive colour, and is perhaps better known by its general aspect, size, and hue, than by any character that can be applied to it. — To us, the above species with floating leaves seem gradually to pass into one another.

16. *P. plantaginæus* Duct. (*Plantain-leaved P.*); leaves all membranous stalked, lower ones oblong, upper elliptical, achenes minute obliquely ovate rounded on the back (when fresh), spike slender cylindrical densely-flowered, peduncle long not thickened upwards, achenes (small) acute at the back. *E. B. S.* t. 2848. *P. coloratus* Horn.: *Cham. and Schl.* l. c. p. 194.

Deep peaty pits and ditches, probably far from rare. Vazon Bay, Guernsey. Norfolk, Cambridgeshire, Kent. Ferneyrig Loch, Eccles, Berwickshire. 6, 7. — It has usually been confounded with *P. natans*, from which it may be discriminated by its beautifully diaphanous reticulated leaves, none of which are coriaceous, and its much smaller fruit. It is more nearly allied to *P. oblongus*, from which its leaves, as well as the acutely keeled back of the fruit when dry, clearly distinguish it; in that plant the fruit is always obtuse: *Bab.*

17. *P. oblongus* Viv. (*oblong-leaved P.*); "leaves all stalked, upper ones coriaceous floating oblong-elliptical, lower linear-lanceolate, achenes minute with their back always obtuse and rounded, spike slender cylindrical densely-flowered upon a long terete peduncle." *Bab.*: *E. B. S.* t. 2849. *P. natans* c. *Merl. and Koch.*

"Far from uncommon, in wet ditches, small streams, ponds and bogs." Frequent in Scotland. 2. 7. — "It is distinguished from *P. natans*, with which most botanists probably confound it, by the form and size of its fruit, as well as by other characters:" Bab. We fear some of the above characters taken from the fruit are not constant, for we have examined specimens where the achenes were decidedly marked on the back with 3 ridges, the middle one being acute. It is found usually in bogs and ditches almost dry in summer; — may not this sufficiently explain why the fruit is not above half the size of that of the next species?

18. *P. natans* L. (*sharp-fruited broad-leaved P.*); lower leaves linear submembranaceous or wanting, upper elliptical coriaceous floating on long stalks many-nerved distinctly cellular, fruit (large) keeled at the back. *E. B. t.* 1822.

Stagnant waters and slow streams, frequent. 2. 6, 7. — Very variable in general size, and in the shape of its floating leaves, which are more or less elongated, sometimes linear-lanceolate, obtuse at the base or decurrent at the footstalks. The lower leaves appear to differ from the submerged leaves of all the others, except *P. oblongus*, in having their substance composed of the same small, but distinct, cells or reticulations as the floating ones. These submerged leaves are frequently wholly wanting, especially when the plant grows in very shallow water. Chamisso and Schlechtendal describe the lower petioles as leafless, which, according to them, is the principal difference between this and the last species; but such assuredly is not always the case.

## 2. RÚPPIA Linn. Ruppia.

*Flowers* perfect, about 2 on a *spike* (or *spadix*?) arising from the sheathing bases of the leaves, which perform the office of a *spatha*. *Perianth* 0. *Stam.* 4. *Anthers* 1-celled. *Style* and *stigma* undivided. *Achenes* 4, on long stalks, 1-seeded. *Albumen* 0. — Named after Henry Bernard Ruppia, author, in 1718, of *Flora Jenensis*.

1. *R. marítima* L. (*Sea R.*). *E. B. t.* 136; *Hook. in Fl. Lond. t.* 50.

Salt-water pools and ditches. 2. 7, 8. — *Stems* slender, filiform, flexuose, branched, leafy. *Leaves* linear, setaceous, with *sheaths* sometimes narrow and small, at other times large and inflated. *Spadix* at first very short, included in the *sheath* or *spatha*, with 2 green *flowers* one above another on opposite sides, and quite destitute of perianth. *Anthers* large, sessile, bursting horizontally, 1-celled. Mertens and Köch say that each pair is, in fact, the 2 cells of 1 *anther*; and that there are in reality but 2 sessile *stamens*. *Pollen* a tube, with 3 globules, 1 in the middle and 1 at each end of the tube. *Germens* resembling 4 minute tubercles in the centre between the anthers. At the time of flowering, the *spadix* lengthens remarkably, to the height of 5 or 6 inches or more, and becomes spirally twisted, so as to bring



the blossoms to the surface of the water; but Mr. Wilson observes the fruit to be submerged in every stage. When the *germens* swell, their base is elongated into a footstalk, one or two inches long. Each then becomes an oblique, ovate, acuminate fleshy *achens*, or *drupe*. This *drupe* is sometimes more beaked than at other times, and the sheaths of the leaves are occasionally but little dilated: then the plant becomes *R. rotellata* of Koch, and of Reichenbach in his *Iconog.* t. 174. f. 306, which indeed is the more common state of the plant with us. We have only seen such large sheaths as are figured for the true *R. maritima* Linn. (Reichenb. *Iconog.* t. 174. f. 307), on specimens from the south of Europe; yet the latter author quotes the figures in *Flora Lond.* as admirably characteristic of his *maritima*. In *R. maritima* the anthers (anther-cells, Koch) are said to be oblong, in *R. rotellata* nearly round; in the specimens we have examined we find them more subquadrate. It is a very widely diffused plant, being found in America, the Sandwich Islands, and on the coasts of Tranquebar and Ceylon, constantly preserving the same appearance.

### 3. ZANNICHÉLLIA Linn. Horned Pond-weed.

*Flowers* monœcious. — *Barren fl.* *Perianth* none. *Stam.* 1. *Anthers* 2—4-celled. — *Fertile fl.* *Perianth* single, of 1 le af *Germens* 4 or more. *Styles* undivided. *Stigma* peltate. *Achenes* nearly sessile. — Named in honour of John Jerome Zannichelli, a Venetian apothecary and botanist.

1. *Z. palustris* L. (*common H.*); *E. B.* t. 1844. —  $\alpha$ . flowers sessile, style half as long as the shortly-stalked achenes. —  $\beta$ . flowers stalked, style half as long as the longest-stalked achenes. *Z. pedunculata* Reich. —  $\gamma$ . style short, about six times shorter than the sessile achenes. *Z. polycarpa* Nolte.

Ditches and stagnant waters. ☉. 8. — Floating. *Stems* long, filiform, branched. *Leaves* opposite, linear, entire, sometimes emarginate at the point. *Flowers* axillary, from a membranaceous bractea. *Sterile fl.* upon a very short stalk, from the base of which arises a single naked *anther*, borne on a long white *filament*. *Anthers* with 2—4 cells. — The form of the stigma, the number of anther-cells, the size and mode of growth, and the fruits more or less stipitate, are very variable; and several proposed species are described and figured by Reichenbach, some of which are noticed above as varieties.

\*\* *Pollen confervoid.* *Plants growing in the sea.*

### 4. ZOSTÉRA Linn. Grass-wrack.

*Flowers* imperfect. *Stamens* and *pistils* inserted in 2 rows upon one side of a flat thin *spadix*. *Spatha* foliaceous. *Anthers* ovate, sessile, alternating with the ovate *germens*. *Style* bifid. *Fruit* with 1 seed (bursting vertically: Wilson). *Albumen* 0. — Named from ζώνη, a girdle, or riband, which the leaves somewhat resemble.

1. *Z. marina* L. (*broad-leaved G.*); leaves linear 3—7-nerved, peduncle of the spatha thick shorter than the linear spadix, achenes striated. *B. B.* t. 467.

Creeks and salt-water ditches, and on the sea-shore, common. 2. 7, 8. — *Stems* various in length, as are the linear, obtuse, somewhat 3—7-nerved leaves, which have sheathing bases. *Spadix* linear, arising from a sheathing portion of the leaf, which thus forms the *spatha*. *Flowers* green, borne, in two rows, on one side of the *spadix*, quite destitute of perianth. *Pistils* and *anthers* alternate, generally 2 *anthers* and then 1 *pistil*, both ovate, or oblong-ovate; the *germen* terminated by a long, filiform, bipartite *style*. *Anthers* bursting irregularly. — This plant is used in the packing of glass bottles and earthenware. In the south of Russia, Pallas tells us, it is found among pottery in old tombs. Beds are frequently made of it, especially in Iceland and the north of Europe; and it is sold in our shops under the name of "*Alva* (*Ulva* or *Alga*) *marina*," for similar purposes.

2. *Z. angustifolia* Roth (*narrow-leaved G.*); leaves linear 1—3-nerved, peduncle of the spatha slender thickened upwards as long or longer than the linear spadix.

Sea-shore. 2. 8, 9. — Such is the character given to this supposed species, but we are by no means sure that we know what is meant: we presume, however, it is the narrow-leaved form of *Z. marina* mentioned in the *Flora Londinensis*, t. 35. as that which usually flowers.

3. *Z. nana* Roth (*dwarf G.*); "leaves 1-nerved, stipular sheath truncate, peduncle of the spatha as long as the spadix not thickened upwards, spadix short few-flowered with extra marginal appendages." *Borr. in E. B. S.* t. 2931.

Dover beach; Poole Harbour, Dorsetshire; Ryde, Isle of Wight. 2. 8. — *Leaves* slender, 3—4 inches or more in length. *Spathas* oblong-lanceolate, inflated. *Fruit* faintly striated (Fries). — With this also we are scarcely acquainted; nor is it perhaps possible to distinguish any of these species satisfactorily except when growing, and in flower or fruit; a proof that they are somewhat artificially separated.

## SUB-CLASS II. GLUMACEÆ. (ORD. CVI. CVII.)

*Flowers destitute of true perianth (unless the curious urceolate or 2—3-valved covering to the ovary in some Cyperaceæ, or the glumellas\* of the Gramineæ, be considered such), but enclosed within imbricated alternate chaffy scales or bracteas.*

### CONSPECTUS OF THE ORDERS.

106. CYPERACEÆ. Embryo at the base of the albumen and enclosed within it. Leaves with entire sheaths.  
107. GRAMINEÆ. Embryo lateral, naked. Leaves with split sheaths.

## ORD. CVI. CYPERACEÆ Juss.

*Flowers* perfect or imperfect, furnished each with a solitary partial bractea called a *glume*, imbricated on a common axis or *rachis*, the whole constituting a *spikelet*. *Perianth*? (here called *perigynium*) only in the fertile imperfect flowers, rarely membranaceous, 2—3-valved, the valves distinct or usually united (in *Carex*), generally entirely wanting. *Stamens* hypogynous, definite (1—12), usually 3, with sometimes an additional row of abortive *filaments* (called *setæ*, or *hypogynous bristles*<sup>1</sup>). *Anthers* erect, 2-celled. *Ovary* superior, 1-celled, with one erect *ovule* at its base. *Style* single, 2—3-cleft. *Stigmas* 2—3. *Fruit* an *achene*, crustaceous, or with a corky or fleshy, sometimes bony skin. *Embryo* lenticular, enclosed in the base of a copious *albumen*. — *Stems* often *angular*, frequently *without joints*. *Leaves* with *entire sheaths*. Lower glumes in each *spikelet* often *destitute of stamens or pistil*.

\* *Flowers* perfect. *Spikelets* 2-ranked. *Perigynium* 0.

1. CYPERUS. *Spikelets* many-flowered; glumes of one valve, keeled, mostly all fertile, equal. *Bristles* none. *Style* deciduous.
2. SCHÆNUS. *Spikelets* 1—4-flowered; lower glumes smaller, empty. *Style* deciduous.

\*\* *Flowers* perfect. *Spikelets* with the glumes imbricating on all sides. *Perigynium* 0.

† *Several of the lower glumes* empty or smaller than the fertile ones.

3. CLADIUM. *Spikelets* with 1—2 perfect flowers. *Achene* with a fleshy or somewhat corky coat, pointed with the slender base of the style. *Bristles* 0.
4. RHYNCHOSPORA. *Spikelets* few-flowered. *Achene* compressed, crowned with the persistent dilated base of the style. *Bristles* 6—12.

†† *Lowest* (1—2) glumes empty or larger than the others, sometimes all fertile.

‡ *Bristles* scarcely so long as the glumes, or wanting.

5. BLYSMUS. *Spikelets* bracteate, alternate, arranged upon a distichous or compressed spike. *Achenes* crowned with the persistent filiform style.

<sup>1</sup> These *bristles* cannot be a *perianth*, because they are situated between the anther-bearing stamens and the ovary: it is more probable, however, that the supposed *perianth*, or *perigynium*, is composed of highly developed *bristles*, usually united; but what renders this doubtful is that in *Carex microglochin*, *Kobresia laxa*, and the whole genus *Uncinia*, we find not only a *perigynium*, but also a solitary internal hypogynous *bristle*, implying that the two are of a different nature.

6. ELEOCHARIS. Spikelets solitary. Achene crowned with the dilated persistent base of the style. Bristles 4—12.
7. ISOLEPIS. Spikelets solitary or fascicled. Achene pointed with the narrow base of the style (the remainder of which is deciduous), or pointless. Bristles 0.
8. SCHIROPUS. Spikelets solitary or fascicled. Achene pointed with the persistent narrow base of the style (the remainder of which is deciduous), or pointless. Bristles about 6.

‡‡ *Bristles at length much longer than the glumes.*

9. ERIOPHORUM. Bristles straight, at length silky.

\*\*\* *Flowers imperfect.*

10. KOBRESIA. Spikelets aggregated, with a scale-like bractea at the base, 1—2 flowered; fertile flowers with a lateral glume. Perigynium 0.
11. CAREX. Achene enclosed within an urceolate perigynium.

\* *Flowers perfect. Glumes of each spikelet imbricated in two opposite rows. Perigynium 0.*

# 1. CYPERUS Linn. Cyperus or Galingale.

*Spikelets many-flowered. Glumes keeled, imbricated in 2 opposite rows, mostly fertile, equal. Hypogynous bristles 0. Style not dilated at the base, 2—3-cleft, deciduous. Achene often tipped with the small base of the style.* — Named from *κυπερος* of the Greeks, an appellation given to one of this genus, probably from the flowers being the colour of the *κυπριος χαλκος*, or copper.

1. *C. longus*, L. (*sweet C.*, or *English G.*); spikelets linear-lanceolate erect-patent in doubly compound umbels, general involucre very long leafy, partial small, stem triangular, stigmas 3. *E. B. t.* 1309.

Very rare. Marsh near St. David's, and at Walton, in Gordon, Somersetshire; near Seabrooke, Kent; Boyton, Wilts; Isle of Wight, Guernsey and Jersey. 4. 8, 9. — *Root* creeping, very aromatic and astringent.

2. \**C. fuscus* L. (*brown C.*); spikelets linear-lanceolate fasciculato-corymbose, glumes patent, involucre of 3 unequal leaves, stem triangular, stigmas 3. *E. B. S. t.* 2626.

Eel Brook meadow, Little Chelsea. Near Waltham Green. Peat-pond on Shalworth common, 2 miles from Godalming, plentiful. 4. 8, 9. — A small plant, only a few inches high. *Root* fibrous. Of the genus *Cyperus* about 370 species are described or noticed in Kunth's *Enumeratio*, some of which are, no doubt, mere varieties. Most of them are tropical: they gradually diminish in number as we recede from the tropics; so that though 2 species have been found in England, none exists in Scotland.

2. *SCHœ'NUS* Linn. Bog-rush.

*Spikelets* 1—4-flowered. *Glumes* 6—9, imbricated in 2 opposite rows, lower ones smaller, empty. *Hypogynous bristles* 3—6, small, or none. *Style* not dilated at the base, 3-lobed, deciduous. *Achene* trigonous, tipped with the slender base of the style, or pointless.—Name: from *σχοινος*, a *cord*, because a kind of cordage was anciently made from plants of this tribe.

1. *S. nigricans* L. (*black B.*); stem rounded, spikelets collected into a rounded head shorter than the outer bractæas, glumes scabrous at the keel. *E. B.* t. 1121.

Wet moors and boggy places. Rare in Scotland, except on the West coast. 2. 6, 7.—Remarkable for its rigid habit, nearly setaceous leaves, and the dark brown almost black heads of flowers. The style is jointed upon the germen and darker than it. "Bristles small, 3—5, reddish-brown, spiny, the spines pointing upwards:" *Mr. Wilson*. On account of the bristles this is more allied to *Mr. Brown's* genus *Chatospora*, in which indeed *Kunth* places it.

\*\* *Flowers perfect. Glumes of each spikelet imbricated on all sides. Perigynium 0.*

3. *CLADIUM* Schrad. Twig-rush.

*Spikelets* 1—2-flowered. *Glumes* 5—6, imbricated on all sides, the lower ones empty and smaller. *Style* with a conical base, deciduous. *Achene* with a somewhat loose, fleshy, or corky coat, tipped with the ovate-conical but not jointed base of the style. *Hypogynous bristles* none.—Named from *κλαδος*, a *branch*; so called, perhaps, from the many branches bearing spikelets.

1. *C. Martius* Br. (*prickly T.*); panicle much divided leafy, spikelets capitate-conglomerate, stem rounded leafy, margins of the leaves and keel rough. *Schœnus* L.: *E. B.* t. 950.

Boggy and fenny places, in several parts of England, as in Norfolk, Cambridge, Kent, Cheshire, Askem in Yorkshire, &c. Plentiful in Galloway and Sutherlandshire, Scotland. 2. 7, 8.—Plant 3—5 ft. high, leafy. Leaves rough, almost prickly at the margin and keel. *Glumes* ovate, brown, 6—7 in an ovate spikelet; inner ones the longest, generally the two or sometimes three innermost ones are floriferous; of which one ("sometimes 2, more rarely all:" *Wilson*) bears a coated nut, almost as large as the spikelet. *Stigmas* generally two, sometimes cloven: *Wilson*.

4. *RHYNCHOSPORA* Vahl. Beak-rush.

*Spikelets* few-flowered. *Glumes* 6—7, imbricated on all sides,

the lower ones smaller, empty. *Hypogynous bristles* several, included, toothed. *Style* subulate, bifid, dilated at the base. *Achene* crowned with the persistent, more or less articulated, dilated base of the *style*.—Named from *βύρχος*, a *beak*, and *σκόρα*, a *seed*. (Very different in habit from *Eleocharis*, although near in generic character.)

1. *R. álba* Vahl (*white B.*); spikelets in a compact corymb as long as the outer bracteas, leaves narrow-linear, base of the style without teeth, bristles 9—12 with deflexed teeth, stamens 2. Schœnus *L.*: *E. B.* t. 985.

Wet pastures and turfy bogs. 4. 6—8.—*Spikelets of flowers* white or whitish, collected so as to form a level surface at the top. In the flowers are 8—11 bristles, with reflexed teeth, much longer than the germen, and decidedly placed outside the 2 stamens. *Fruit*, in this and *R. fusca*, obovate, compressed, distinctly margined, tapering at the base into a short stalk. *Style* persistent, thin, pellucid, often greenish, dilated at the base, which is not articulated, nor so broad as the seed, but immediately distinguishable from the shining *achene* by its colour and texture. If *R. aurea*, the first species described by Vahl, be considered the type of the genus, then must our two British species be separated from it, if the fruit and the *style* are to afford characters; for in *R. aurea* the achene is obovate, indeed, but not at all compressed nor margined, the style is very large, thick, corky, swollen at the base, and remarkably constricted where it is set upon the germen, it is moreover grooved on two sides. We find but one flower in the spikelets of *R. aurea*, two in those of *R. álba*.

2. *R. fúsca* Sm. (*brown B.*); spikelets in an oval head much shorter than the outer bracteas, leaves almost filiform, base of the style with erect teeth, bristles 6 with ascending teeth, stamens 3. Schœnus *L.*: *E. B.* t. 1575.

Bogs, principally in the south-west of England and Ireland. 4. 7, 8.—Habit of the last, though very different in specific character. Heads of *flowers* oval, rich brown; *spikelets* larger and the *stigmas* more protruded. *Stamens* 3. Smith and Sturm have figured and described only 3 bristles to each flower: we find 6 (which have erect teeth: *Wilson*) in the British, as well as in American specimens, which latter are in no respect different from ours.

### 5. *BLÝSMUS* Panz. *Blýsmus*.

*Spikelets* bracteated, arranged on a zigzag rachis into a distichous compressed *spike*. *Glumes* imbricated on all sides; the outermost gradually the largest, empty. *Hypogynous bristles* 3—6, or none. *Achene* compressed, oval, gradually tapering into the persistent *style*.—Named from *βλυσμος*, *source*, or *spring*, near which the species usually grow.

1. *B. compréssus* Panz. (*broad-leaved B.*); lowermost bractea

subulate somewhat leafy, bristles 3—6 with reflexed teeth persistent as long as the permanent style, leaves flat keeled rough on the margins and keel. Schœnus *L.*: *E. B.* t. 791. *Scirpus caricinus E. Fl.* v. i. p. 58. *Carex uliginosa L.*

Boggy pastures, by river-sides and near the sea, not uncommon. *Æ.* 6, 7. — Stem 6—8 inches high, leafy. *Glumes* brown, striated. *Bristles* with reflexed spines. The habit of this and the following species is quite peculiar.

2. *B. rufus* Link (*narrow-leaved B.*); bracteas all equally membranaceous, bristles 1—6 slender caducous or none, leaves very narrow grooved smooth. Schœnus *E. B.* t. 1010. *Scirpus Schrad.*: *E. Fl.* v. i. p. 59.

Marshy plains, especially near the sea; particularly common in Scotland, as far as Shetland. On the coast of Wales, west of England, and west of Ireland. *Æ.* 7. — Slenderer and more rigid than the last, more upright: *spikes* darker; the *glumes* more membranaceous, thin, not striated, and obtuser, in both very broad and convolute.

## 6. ELEOCHARIS Br. Spike-rush.

*Spikelets* solitary, terminal, many-flowered. *Glumes* imbricated on all sides, uniform, scarcely any empty, lowermost the largest. *Hypogynous bristles* (4—12) toothed, included, rarely none. *Style* 2—3-fid, its dilated base jointed upon the *germen*. *Achene* mostly lenticular, crowned with the broad indurated corky base of the style. — *Marsh plants*. Stems simple, leafless, sheathed at the base. — Name: *ελος, ελεος, a marsh*, and *χαίρω, to delight*; from the place of growth.

1. *E. palustris* Br. (*creeping S.*); stem rounded, root much creeping, stigmas 2, fruit lenticular plano-convex crowned with the compressed base of the style shorter than the 4 bristles. *Scirpus L.*: *E. B.* t. 131.

Sides of ditches and wet marshy places, frequent. *Æ.* 6, 7. — “Root creeping (to a great length), black and shining, as well as the external *sheaths* of the stem. *Bristles*, in the flower only 4, longer than the ripe fruit, flattened, dilated at the base, and broader than the filaments. *Receptacle* elongated below the insertion of the filaments, so that the flower appears to be not quite sessile, as it is in *E. multicaulis*. *Germen* shorter and broader than in the next species, the style is also shorter. Again: the section of the stem is different from that of *E. multic.*, without any central pith, but with larger membranous tubes, surrounded by smaller ones:” *Wilson MSS.* Some botanical writers make two species of this: one with the outer glume only half surrounding the spike at its base, the other, hence called *E. uniglumis* by Link, almost wholly surrounding it. For the last the following stations are given: Aberdeen, *Dr. Dickie*; Barvas, Isle of Lewis, *Mr. Babington*; and Parkstone, near Poole Harbour, *Mr. J. Woods*. We have seen specimens from Dr. Dickie and Mr.

Babington, and cannot distinguish them from a small state of *E. palustris* collected by us in the Isle of Bute more than 20 years ago, and which, we believe, is not uncommon in wet sandy places near the sea in both England and Scotland; nor have we yet met with any plant under that name that ought not to be referred to it or to the next species, to which indeed many of the specimens which we have seen from Germany belong: the glume itself affords no character, and there is no difference in the form of the tubercular persistent base of the style.

2. *E. multicaulis* Sm. (*many-stalked S.*); stem rounded, root scarcely creeping, stigmas 3, fruit obovate triquetrous crowned with the triquetrous base of the style longer than the 6 bristles. *Scirpus E. B.* t. 1187. *Scirpus palustris* β. *Linn. Lapp. ed.* 2.

Not uncommon, probably, in marshy places throughout the kingdom, but frequently passed by for *E. palustris*. 4. 7.— Exceedingly closely allied to the last, of which Kunth seems disposed to consider it a variety. Like *E. palust.* it has the outer glume either half surrounding or almost wholly surrounding the spikelet: the latter state is the *E. uniglumis* of many foreign collectors. The simplest and sometimes only distinguishing character between this and *E. palustris* is afforded by the fruit; but in the states usually found, Mr. Wilson points out the following in addition:—“Root not creeping.<sup>1</sup> Sheaths of the stem brown, not shining: the stems are always inclined, frequently bent and almost prostrate. Bristles 6, shorter and narrower than in the former species, the base not dilated, shorter than the ripe fruit. The receptacle is elongated above the insertion of the filaments; hence the germen seems to be attenuated below. Stem with a stout central pith, with membranous tubes of looser texture interposed between it and the external part. Some of the bristles in the flower seem to be attached to the receptacle higher up than the base of the filaments, but still 3 of these bristles are at the exterior base of those filaments.” *Wilson MSS.*

3. *E. acicularis* Roem. et Sch. (*least S.*); stem setaceous almost round, sheaths leafless, spike ovate acute, glumes equal acute, stigmas 3, bristles 2—3. *Ed. Cat.* p. 5. *Scirpus E. B.* t. 749. *Isolepis Schlecht.* *Scirpidium Nees.*

Sides of lakes, and wet, sandy, and marshy places, frequent. 4. 7, 8.— The most slender and delicate of the *Spike-rushes*. Root fibrous, with filiform runners. Fruit obovate, oblong, compressed, pale yellow, beautifully impressed with dotted lines, tipped with the almost globose dark base of the style.

7. *ISÓLEPIS* R. Brown. *Isolepis*. Mud-rush.

*Spikelets* many-flowered. *Glumes*, imbricated on all sides,

<sup>1</sup> Not, indeed, as in *E. palustris*; but it certainly sends out root-stocks to the length of 2 or 3 inches, from which fibres proceed below and new shoots above. The roots cannot be called simply tufted.



nearly all fertile and equal. *Hypogynous bristles* 0. *Style* 2—3-fid, not thickened at the base, deciduous. *Achene* tipped with the narrow base of the style, or pointless. — Named from *ἴσος*, *equal*, and *λεπίς*, a scale, on account of the relative form of the scales which constitute the inflorescence.

\* *Styles* 2. *Achenes* compressed. *Spike* solitary, terminal. Eleogiton.

1. *I. fluitans* R. Br. (*floating I.*); stem (or rather floating root) compressed branched, spikes ovate, glumes nearly equal obtuse, stigmas 2, bristles none, fruit obovate plano-convex tipped with the narrow base of the style. *Scirpus* L.: *E. B.* t. 216. *Eleocharis* Hook. Br. Fl. Eleogiton Link, Lindl.

Ditches and still lakes, and pools of water which are sometimes dried up. *℥.* 6, 7.

\*\* *Stigmas* 3. *Achenes* triquetrous.

† *Spikes* 1—3, often apparently lateral, from the lower bractea being a continuation of the stem.

2. *I. setacea* R. Br. (*Bristle-stalked M.*); stem compressed with 1 or 2 leaves at the base, spikelets about 2 terminal, general bractea erect leafy much shorter than the stem, achene mucronate ribbed obovate and marked with transverse lines. *E. B.* t. 1693.

Moist gravelly places, frequent. *℥.* 7, 8. — *Stems* tufted, 2—5 in. high, very slender. *Stam.* 2. *Stigmas* 3.

3. *I. Savi* Schultes (*Savi's M.*); stem round leafy below, spikelets 1—3 terminal shorter than the unequally two-leaved involucre, fruit subglobose minutely dotted not furrowed. *Scirpus* Hook. in *E. B. S.* t. 2782. *Roem. et Sch.* *Scirpus filiformis Savi.* — *β. monostachys*; spikelet solitary with a shorter involucral bractea. Hook. l. c. *I. pygmæa* Kunth. *Fimbri-stylis* Vahl. *Scirpus leptaleus* Koch.

Wet bogs, Ireland, and in the west of England and Scotland; Shanklin, Isle of Wight, plentiful. Jersey. — *β.* Dorsetshire; North Devon; near Ryde, Isle of Wight, not uncommon. Cork, and other places in Ireland. *℥.* 7. — In habit much, resembling the last species, as the *var. β.* does the *Eleocharis acicularis*; the fruit is however quite peculiar. *Stamens* 3. *Fruit* usually rough with slightly elevated points; but in specimens from Galloway, Scotland, it only appears to be rough on account of numerous impressed dots, like a thimble. Under the name of *pygmæa*, it has a very wide geographical distribution, extending from Europe to America, and thence to the Cape of Good Hope, New Holland, and New Zealand; while under that of *Savi* it is recorded as only European. The name *pygmæa* is the oldest, but is not always applicable.

†† *Spikes numerous, collected into globular heads.*

4. *I. Holoschæ'nus* Roem. and Sch. (*round cluster-headed M*); stem rounded, spikelets lateral collected into compact globular sessile or stalked heads, leaves subulate channelled. *Scirpus* L.: *E. B. t.* 1612.

Sandy sea-shores, only found in the extreme southern and western parts of England. 4. 9.

# 8. *SCIRPUS* Linn. Club-rush. Bull-rush.

*Spikelets* solitary or fascicled, many-flowered. *Glumes* imbricated on all sides, equal, 1 or 2 of the lowest sometimes sterile. *Hypogynous bristles* about 6, usually retrorsely toothed, scarcely so long as the glumes. *Style* inarticulated, deciduous. *Achene* tipped with the narrow base of the style, or pointless. — Name, according to Théis, from *Cirs*, in Celtic, which makes *Cors* in the plural, whence *chorda* in Latin, and *cord* in English; the stems having been formerly employed for the same purposes as those of *Schæ'nus*.

\* *Spikes numerous. Stem rounded.*

1. *S. lacustris* L. (*Lake C. or B.*); spikelets in compound lateral umbels mostly shorter than the rounded almost leafless stem, glumes notched mucronate smooth ciliated, anthers bearded at the end, style trifid, achene bluntly trigonous obovate shining and polished. *E. B. t.* 666.

Plentiful on the margins of lakes and ponds. 4. 7, 8. — *Root* much creeping. *Inflorescence* truly lateral, near the extremity of the stalks, which are very variable in size, 2—6 or 8 feet high, and as thick as a finger at the base. *Spikelets* often almost sessile. *Glumes* brown, fringed. *Stigmas* 2—3. *Fruit* obovate-triangular, accompanied by 5 or 6 bristles. The stems are much used for mats, chair-bottoms, &c., and they constitute a considerable article of trade. Coopers employ them for filling up spaces between the seams of casks, their spongy nature well adapting them to that purpose.

2. *S. Tabernæmontâni* Gmel. (*glaucous C.*); spikelets in compound lateral umbels mostly shorter than the rounded almost leafless stem, glumes notched mucronate rough with raised points ciliated, anthers glabrous at the end, style bifid, achene elliptical compressed (pale brown). *S. glaucus* Sm.: *E. B. t.* 2321.

Rivers and ponds, also where the water is brackish. Very abundant on both sides of the Clyde between Bowling bay and Glasgow. 4. 6—8. — We admit this species, but with some hesitation, its general aspect being only characterized by the glaucous colour, which may not be constant: the distinction therefore rests solely on artificial or microscopical characters.

**\*\* Spikes numerous.** Stem triangular towards the apex. Panicle naked, terminal, but often apparently lateral from the lower bractea being a mere continuation of the stem. Style bifid. Achene lenticular, compressed.

3. *S. triquetus* L. (*triangular C.*); stem acutely triquetrous straight at the point, its upper sheath with a short broad triquetrous leaf, spikelets ovate or oblong-ovate clustered lateral sessile and stalked naked, glumes notched mucronate smooth fringed, the lobes rounded obtuse, stigmas 2, achenes smooth. *E. B. t.* 1694.

Muddy banks of rivers, near London. River Arun, near Amberley, Sussex.  $\gamma$ . 8. — “*Anthems* with a short beardless point,” *Bab.*, “denticulated at the point,” *Kunth*.

4. *S. pungens* Vahl (*sharp C.*); stem triquetrous straight at the point, sheaths with long narrow keeled leaves, spikes 1—3 sessile lateral, glumes bifid mucronate smooth slightly fringed their lobes acute, stigmas 2, achenes smooth. *Bab. in E. B. S. t.* 2819. *Sc. Rothii Hoppe*. *Sc. tenuifolius DC.* *Sc. triquetus*  $\beta$ . *Sm. Engl. Fl. i.* 60. *Juncus acutus maritimus*, caule triquetro rigido, mucrone pungente. *Ray Syn.* 429.

On the wet sandy banks of St. Ouen's Pond, Jersey, first noticed by Sherard, as recorded in Ray's *Syn.*  $\gamma$ . 6, 7. — Distinguished from *Sc. triquetus*, by its acutely lobed glumes. “*Anthems* with a subulate fringed point:” *Bab.*

5. *S. carinatus* Sm. (*blunt-edged C.*); stem rounded below bluntly triangular upwards, its sheaths leafless or the uppermost one with a leaf, cyme terminal decomposed, involucre of 2 unequal leaves, spikelets oblong, glumes notched mucronate slightly rough with raised points ciliated, stigmas 2, achenes smooth. *E. B. t.* 1983. *S. trigonus Roth.* *S. Duvalii Hoppe*.

Banks of rivers, very rare. About London and on the banks of the Arun, Sussex.  $\gamma$ . 7, 8.

**\*\*\* Spikes numerous.** Stem triangular. Panicle leafy. Style 3-*fid.* Achenes somewhat trigonous.

6. *S. maritimus* L. (*Salt-marsh C.*); stem leafy triangular, spikelets terminal clustered stalked and sessile, involucre of many foliaceous leaflets, glumes with a mucro between the acute segments of the notch. *E. B. t.* 542.

Salt-marshes, frequent.  $\gamma$ . 7, 8. — Root creeping, sometimes swelling into knots or tubers. Leaves frequently longer than the stem, flat, acuminate. Stigmas 3. Bristles 3—4, accompanying the smooth, obovate-triangular fruit.

7. *S. sylvaticus* L. (*Wood C.*); stem triangular leafy, cyme terminal many times compound, involucre of many foliaceous leaflets, glume entire obtuse with a small sharp point. *E. B. t.* 919.

Moist woods and banks of rivers. Not frequent in England, but abundant in South Kent. About Killin, at the head of Loch Tay, Perthshire; Lanarkshire, and in very many places in the south of Scotland. 4. 7.—A handsome species, bearing innumerable small, greenish, ovate *spikelets*. Stem 2—3 feet high. Leaves broadly linear. Bristles scarcely longer than the achene, straight and sharply toothed, the teeth pointing downwards: in the allied *S. rudicans* Schk. the spikelets are all solitary, and the bristles are long, capillary, flexuose, and puberulous at the apex.

\*\*\* Spike solitary, terminal. Style 3-fid. Achene trigonous. Bræothryon.

8. *S. pauciflorus* Lightf. (*Chocolate-headed C.*); stem rounded, its sheaths leafless, spike ovate naked, the 2 outer glumes the largest obtuse but shorter than the spike, stigmas 3, achene reticulate-striated longer than the retrorsely hispid bristles pointed with the longish base of the style. E. B. t. 1122. *S. Bræothryon Ehrh.* *Eleocharis pauciflora Link.*

Moors in Scotland, not unfrequent. In England, rare; near Yarmouth, Norfolk; Anglesea, and Bangor in Wales. 4. 7, 8.—Habit of small plants of *Eleocharis palustris*. Fruit pale, obovate, triquetrous, terminated by the rigid base of the withered style, not swollen at the base nor jointed, gradually tapering from the obtuse point of the fruit. Roots fibrous, sending out jointed runners.

9. *S. parvulus* Rœm. and Sch. (*least C.*); stem without leaves or sheaths, spike terminal few-flowered, stigmas 3, hypogynous bristles retrorsely hispid twice as long as the obovate oblong mucronate smooth achene, root fibrous, radical leaves roundish. *Eleocharis Hook. Br. Fl.*

Found a few years ago on a muddy flat near Lymington, Hants; but the place having been lately much altered, "the very spot, perhaps, being now occupied by a swimming-bath," has since been searched for it in vain: Rev. E. G. Smith. This gentleman has obligingly transmitted a specimen of this minute plant, which seems little known even upon the Continent. It is said to be annual, but that the roots creep by means of capillary stolones. Mr. Babington describes this with "one close-pressed leafless sheath" on the stem, and "leaves filiform acute radical slightly dilated at the base and clasping the stem," probably meaning what we and others consider barren stems. In habit it is most related to *Isolpis fluitans*, of which some consider it a dwarf variety.

10. *S. cespitosus* L. (*scaly-stalked C.*); stem rounded or slightly compressed (*Wilson*), sheaths with subulate leaves, the two outermost glumes (fertile) longer than the very small spikes and terminating in long rigid points, stigmas 3, achene pointed with the persistent base of the style shorter than the bristles which have a few erect teeth near the point. E. B. t. 1029. *Eleocharis Link.*

Moors and moist heathy places, every where. 4. 6, 7. — A small species, 2—3 inches high. Bristles 6. Fruit obovate, triquetrous, pale yellow, tipped with a mucro, as in most of the true *Scirp*. This plant is called "Deer's Hair" in the Highlands, and yields an abundant food to sheep on the mountains in spring. Upon Ben Lawers a variety is sometimes found, having the larger of the 2 outer glumes an inch long, 4 times the length of the spike.

### 9. *ERIOPHORUM* Linn. Cotton-grass.

*Spikelets* many-flowered. *Glumes* imbricated on all sides, nearly equal, all fertile or the lowermost sometimes empty. *Hypogynous bristles* several, protruded, very long and silky. *Style* 3-fid, deciduous. *Achene* triquetrous, tipped with the narrow base of the style or pointless. — Named from *ερια*, wool, and *φωσ*, to bear.

\* *Spikelets* solitary. Bristles 4—6, at length crisped.

1. *E. alpinum* L. (*Alpine C.*); stem triangular, leaves much shorter than the sheaths, spikes oblong-ovate. *E. B. t.* 311.

It was discovered in the Moss of Restenet near Forfar, by Mr. Brown and Mr. G. Don; but that bog is drained and the plant has disappeared. 4. 6.

\*\* *Spikelet* solitary. Bristles very numerous, straight.

2. *E. vaginatum* L. (*Hare-tail C.*); stem above triangular, sheaths below with long setaceous leaves, above leafless obtuse inflated, spike ovate. *E. B. t.* 873.

Turf-bogs and barren moors, not unfrequent, especially in the mountainous parts of the north. 4. 3—5.

3. *E. capitatum* Host (*round-headed C.*); stem rounded, sheaths below bearing linear tubulate leaves, above leafless inflated obtuse, spike almost globose. *E. B. t.* 2387.

\* "Ben Lawers, by the side of a rivulet near perpetual snow:" G. Don. 4. 7, 8. — We fear that Mr. Don had mixed by mistake some foreign specimens in his possession with the *E. vaginatum*, which is very common on Ben Lawers, and which alone we have found there.

\*\*\* *Spikelets* several to each stem, peduncled or fascicled.

4. *E. latifolium* Hoppe (*broad-leaved C.*); stem triangular upwards, leaves nearly flat below lanceolate contracted into a triangular point above the middle, stalks of the spikelets scabrous (usually elongated), bristles 2—3-times longer than the cuneate-obovate achene, glumes 1-nerved. *E. polystachyon* (a) L. ? *Flor. Spec. : Dickson : Sm. in E. B. t.* 563. *E. pubescens* Sm. : *E. B. t.* 2633.

Bogs, marshes, and heaths, rather rare. Cambridgeshire; Nottinghamshire; Northamptonshire, and most of the northern counties. Anglesea. Berwickshire; Bonnington Woods, Lanarkshire; and perhaps several other counties in Scotland. 4. 5, 6. — The figure

in *E. B.* of Smith's *E. polystachyon* so completely resembles this species that we have no hesitation in referring it here, and Dickson's specimens of the same in his *Herb. Br. fasc. 4. n. 1.*, are unquestionably this species; but it is probable that Smith had likewise in view a rather broad-leaved variety of the next. As Linnæus applied the name of *polystachyon* to both this and the next species, and it is equally applicable to the whole section and therefore liable to mislead, we prefer that given by Hoppe and adopted by most foreign botanists.

5. *E. angustifolium* Roth (*narrow-leaved C.*); stem nearly round, leaves linear channelled and folded or sometimes nearly flat towards the base, triangular above the middle, stalks of the spikelets quite smooth, bristles 4-(or more)-times longer than the obovate achene, glumes 1-nerved. — *a.* leaves narrow folded at the base. *E. B. t.* 564. *E. gracile* Sm.: *E. B. t.* 2402. *E. polystachyon*  $\beta$ ?,  $\gamma$ . *L. Flor. Suec.* —  $\beta$ . leaves broader and somewhat flat towards the base. *E. polystachyon* Sm. (partly).

Turf-bogs, meadows, and moors, common.  $\gamma$ . 5, 6. — Having examined Don's specimens of Smith's *E. gracile*, from Ben Lawers, we can with confidence refer them to this species.

6. *E. gracile* Roth (*slender C.*); stem somewhat triangular, leaves narrow linear triquetrous throughout, stalks of the spikes densely scabrous-pubescent, bristles about twice as long as the narrow oblong triangular shortly stalked achene, glumes many-nerved. *E. B. S. t.* 2886. *E. triquetrum* Hoppe.

Bogs in England, rare. Near Hagnaby in Yorkshire, about 4 m. from Darlington. White Moor pond, Surrey, half way between Guildford and the Woking station on the S. Western Railway.  $\gamma$ . 6, 7. — The above three species appear truly distinct: the first and last have scabrous or downy stalks to the spikelets, particularly *E. gracile*, but differ widely in the foliage: *E. angustifolium* has an intermediate kind of leaf, but the stalks of its spikes are quite glabrous.

\*\*\* *Flowers imperfect.*

# 10. KOBRESIA Willd.. Kobresia.<sup>1</sup>

*Spikelets* 1—2- (or 4-) flowered, included in a broad sheathing bractea, aggregate, and forming a compound spike. *Flowers* all imperfect. — *Barren fl.* in the fertile spikelets above the fertile one and within a convolute glume, in the sterile spikelets naked. *Stam.* 3. — *Fertile fl.* within a convolute glume. *Peri-*

<sup>1</sup> Nees v. Eschbeck considers the bractea in this genus to be the glume, and what we have called glumes to be partial ones or scales. If this view be correct, the for. ign. *K. scirpinus* Willd., to which the name *Elyna* was applied by Schrader in 1806, would have but a single terminal spikelet, each glume 2-flowered, and each flower with its own scale; while in *K. caricina* &c. the spikelets are several, aggregated, each one-flowered, the fertile flowers with 2 scales, the sterile naked: for these the name *Kobresia* given by Willdenow in 1805 is retained. Although we do not quite agree with this view of the structure, we retain for this combined genus the older name; although most German botanists prefer that of *Elyna*. *K. lasa* N. ab *E.* seems to form a distinct genus.

*gynium* 0. *Style* 1. *Stigmas* 3. *Achens* obtuse trigonal, surrounded by its convolute scale. *Perigynium* wanting. — In habit nearly allied to *Scirpus* and *Blysmus*, but the flowers are monœcious: it has not the urceolate *perigynium* of *Carex*. — Named in honour of *M. de Kobres*, of Augsburg, a patron of botany.

1. *K. caricina* Willd. (*compound-headed K.*); spikelets aggregated into a lobed spike, fertile spikelets below the sterile ones usually 1-flowered rarely with an upper rudimentary or staminate floret, sterile spikelets 1-flowered without a glume. *Elyna* Mert. et Koch. *Schœnus monoicus* Sm.: *E. B. t.* 1410.

Moors in Durham and Yorkshire. On Cronkley Fell and about Widdy bank in Teesdale Forest. On Shroine-ach-Lochan, Perthshire. 4. 8. — Scarcely a span high, densely tufted, with narrow-linear leaves, shorter than the naked stem. *Bracteas* and *scales* remarkably convolute, brown. *Germen* oblong, scarcely trigonal.

### 11. *CÁREX* Linn. *Carex* or Sedge.

*Spikelets* several-flowered; *flowers* imperfect, the two kinds in the same or in different spikelets. *Glumes* imbricated on all sides. — *Barren fl.* *Stam.* 2—3. — *Fertile fl.* *Perigynium* of one piece, urceolate, enclosing the *pistil*. *Style* 1. *Stigmas* 2—3. *Achene* compressed or triquetrous, very rarely (in *C. microglochin*) with an hypogynous bristle, included within the persistent *perigynium* (which is therefore in this genus supposed to form the external part of the *fruit*). — Name: supposed to be derived from *gearr* in Celtic, hence *καίρω* in Greek, to cut or shear, in allusion to its sharp-angled leaves and stems.<sup>1</sup>

#### i. *Spikelet* solitary, terminal. *Stigmas* 2.

\* *Diœcious*.

1. *C. dioica* L. (*creeping separate-headed C.*); spikelet simple diœcious, fruit mostly ascending ovate shortly acuminate rough

<sup>1</sup> In this difficult genus, the species with glabrous fruit and terminal barren spikelets require to be entirely rearranged, many of them not strictly agreeing with the characters of the sections to which they are referred. Thus, some of those placed in the section with single barren spikelets have occasionally as many as 3, and a few of those of the section with 2 or more such spikelets exhibit frequently only one. The length of the fertile spikelets is also uncertain; and their being stalked or sessile, erect or drooping (even although we refer only to the lowermost one), are characters equally subject to variation in the same species. *C. glauca* and *hordetiformis* show likewise that the pubescence of the fruit is not always to be relied on, Mr. Babington arranging the former in a different group from that in which we have placed it. The form of the *achene* varies considerably in the same species, but usually within certain limits; so that when there is a very marked difference, it may be used as an auxiliary for distinguishing two that are allowed to be distinct, but of which the diagnosis wants precision: its surface, as to the marking, appears to us to be almost the same in every British species, being minutely and closely dotted with impressed points, at length, when ripe, almost quite smooth, and never rough with raised points or papillæ.

at the margin upwards, leaves and stem smoothish, root creeping. *E. B. t.* 543.

Spongy bogs. 4. 5, 6. — A span high.

2. *C. Davallidna* Sm. (*prickly separate-headed C.*); spikelet simple dioecious, fruit ovate much acuminate recurvate-reflexed rough at the margin upwards, leaves and stem rough, root tufted. *E. B. t.* 2123.

Lansdown, near Bath; on the slope of a hill on which there is a clump of firs. 4. 6. — Stem 1 span to 1 foot high.

\*\* *Androgynous.* (*Stamens and pistil in the same spikelet.*)

3. *C. pulicáris* L. (*Flea C.*); spikelet simple, upper half with barren flowers, fruit lax oblong-lanceolate acuminate reflexed, stigmas 2. *E. B. t.* 1051.

Bogs, frequent. 4. 5, 6. — A span high. Stems smooth. Leaves setaceous or filiform. Fruit dark brown, shining, smooth.

ii. *Spikelet solitary, terminal.* Stigmas 3.

4. *C. rupéstris* All. (*Rock C.*); spikelet linear with a few fertile lax flowers at the base, fruit obovate triquetrous rostrate appressed with an entire orifice scarcely longer than the obtuse or cuspidate persistent glumes. *E. B. S. t.* 2814. *C. petraea* Wahl. *C. attenuata* Br.

Discovered in 1836, on shelves of rocks extending from the small round lake at the top of Glen Callater, eastward to the "breakneck fall, Aberdeenshire;" Glen Dole, Clova; Inchnadamff, Sutherland; Ben Lawers, Mr. A. Mactier (1849). 4. 7. — Root creeping. Stem 3—8 inches high, rough upwards. Leaves flat, ending in a long, attenuate, tortuous, rough, triangular point. Barren flowers most numerous: fertile 3—6, lax; lower glumes sometimes acute or cuspidate: Boott.

5. *C. pauciflora* Lightf. (*few-flowered C.*); spike simple of few flowers the uppermost barren, fruit lax lanceolate-subulate patent-reflexed longer than the deciduous glumes, stigmas 3. *E. B. t.* 2041. *C. leucoglochin* Ehrh.

Not unfrequent on the Highland mountains, in moory places. Lowther hills, near Dalven pass, and meadow above Drumlanrig Castle, Dumfriesshire. Crag Lake, Northumb. 4. 6, 7. — Fruit pale-yellowish, striated.

iii. *Spikelets androgynous in a compound spike.* Stigmas 2.

\* *Spikelets capitate, sterile at the end.* Bractees not foliaceous.

6. *C. incurva* Lightf. (*curved C.*); spikelets sterile at their extremity collected into a roundish head, bractees membranaceous shorter than the spikelets, fruit broadly ovate acuminate nearly entire at the point, stem obtusely angular, leaves channelled. *E. B. t.* 927. *C. juncifolia* All.



Sandy sea-shores, in the N. of Scotland. 4. 6. — *Root* much creeping. *Stems* 2—4 inches high, curved. *Head of spikelets* large.

\*\* *Spikelets* alternate, sterile at their base. *Root* tufted, not creeping.

† *Fruit* with a narrow membranaceous wing or margin.

7. *C. ovális* Gooden. (*oval-spiked C.*); spikelets about 6 sterile at the base oval approximate, fruit as long as the glume ovate-acuminate compressed plano-convex striated with a broad membranous margin rough at the edge, the beak bifid. *E. B. t.* 306.

Bogs and marshy places. 4. 6. — *Stems* 1 foot high, triangular. *Spikelets* brownish-green, shining. *Glumes* concealing the fruit. *Bracteas* small, uppermost ones resembling the glumes.

†† *Edges of the fruit* acute or obtuse, not winged.

† *Bracteas* not foliaceous.

8. *C. stelluláta* Gooden, (*little prickly C.*); spikelets few (3—4) sterile at their base roundish distant, fruit ovate much attenuated plano-convex acute angular spreading rough at the margin. *E. B. t.* 806.

Marshy and heathy places. 4. 5, 6. — *Stem* from a span to a foot high. *Leaves* nearly as long as the stem. Distinguished by its few, much-beaked capsules, placed in small distant roundish spikelets, and spreading, when ripe, in every direction.

9. *C. cúrta* Gooden. (*white C.*); spikelets 4—8 sterile at their base rather distant or sometimes approximated elliptical, bracteas very minute (except the lower one), fruit erect broadly ovate acute plane above slightly convex beneath subobtusangular faintly striated longer than the glumes. —  $\alpha$ . beak of fruit emarginate not split. *E. B. t.* 1386. —  $\beta$ . *alpicola*, beak of fruit split to its base, *C. Persoonii* Sieber.

Bogs, in several places, not very general. Very common about Glasgow.  $\beta$ . Loch-na-gar; Ben Lawers; Ben Wyvis. Snailsworth dale, Yorkshire, 4.  $\beta$ . — Distinguished by its pale elliptical spikelets, and imbricated, compressed, almost elliptical fruit.

10. *C. leportna* L. (*Hare's-foot C.*); spikelets 3 rarely 4 ovate contiguous, fruit elliptic rostrate plano-convex smooth-nerved with a scariose bifid finally entire orifice scarcely longer than the ovate obtuse glumes which are scariose at the margins. *E. B. S. t.* 2815. *C. Lachenalii* Schkh. *Y. f.* 79. *C. lagopina* Wahl.

Rocks on the west side of Loch-na-gar, and on Cairn Tuill, Aberdeenshire. 4. 7. — *Root* fibrous. *Stem* 4—8 inches high, smooth, rarely rough below the spike. *Leaves* a line broad, shorter than the stem. *Spikelets* brown. *Bracteas* broad, ovate, obtuse, the lowest aristate,

rarely foliaceous and larger than the spikelet. *Achene* elliptic, plano-convex, pale yellow: *Boott.*

11. *C. elongáta* L. (*elongated C.*); spikelets numerous oblong lax rather distant sterile with minute pointed bracteas, fruit plano-convex oblong acuminate many-ribbed scarcely bifid at the point patent longer than the glumes. *E. B. t.* 1920.

Marshes, rare. Aldwark, Yorkshire; near Sheffield; Over, Cheshire; Shropshire; Coggeshall, Essex; near Manchester. Ahagallan, county of Antrim, Ireland: *Mr. D. Moore.* 4. 6. — *Roots* tufted. *Stems* 1—1½ foot high, with 3 acute angles, rather rough, as well as the leaves. *Spikelets* brown. *Fruit* lax. A very distinct species.

†† *Bracteas foliaceous.*

12. *C. remóta* L. (*distant-spiked C.*); spikelets several (small) sterile at their base very distant, fruit longer than the glume oblong-ovate shortly-acuminate plano-convex acute angular bifid at the point, bracteas very long and narrow leafy reaching beyond the spike. *E. B. t.* 832. *C. tenella* Schkhh.

Woods and moist shady places. 4. 6. — Whole plant very slender, pale green, 1—1½ foot high. Resembling the following in many respects; but "the stem has blunter angles; the lowest bractea is much longer than in that species; the leaves are compresso-caniculate (with incurved sides) and much narrower; the glumes, too, are narrower, their nerve quite smooth, discontinued below the membranous summit: " *W. Wilson.*

\*\*\* *Spikelets alternate, sterile at their extremity, the lowest or most of them compound. Root fibrous.*

13. *C. axilláris* Gooden. (*axillary-clustered C.*); spikelets several sterile at the end very distant and compound below, crowded and simple above, fruit longer than the glume oblong-ovate shortly acuminate plano-convex acute-angular the beak deeply bifid, lowest bractea foliaceous as long as the spike, the middle ones setaceous shorter, upper ones with a point scarcely so long as the spikelet. *E. B. t.* 993.

Marshes, rare. Putney, by London; Earsham, Norfolk; Over, Cheshire; Manchester; York. 4. 6. — *Stem* with 3 acute angles; *spikelets* with more numerous flowers than the last, lower one compound. *Glumes* with 2, close, green, generally rough nerves, reaching to the summit, hence more rigid. In the lower spikelets there are scarcely any sterile flowers, in the upper ones they are more numerous; in both they are certainly at the end of the spikelet in British specimens, as was first observed by the Rev. W. J. Coleman.

14. *C. Boenninghausiána* Weihe (*Boenninghausen's C.*); spikelets several sterile at the end crowded and simple above, fruit as short as the glume ovate-acuminate plano-convex acute-angular the beak nearly entire, lower bractea foliaceous as long as the spike, middle ones shortly setaceous scarcely so long as

the spikelets, upper ones obtuse pointless. *Colem. in E. B. S. t. 2910.* *C. Hailstoni* *Gibs. in Phyt. i. p. 870.*

Marshes and by the sides of ponds, rare. Balls wood, Hertford; Congleton, Cheshire; Esher, Surrey; Pulborough and Hastings, Sussex; Isle of Wight. Killin, Perthshire; Culreach near Gordon Castle, Banffshire; Crichton Castle near Edinburgh. *4. 6.* — Very closely allied to the last and often perhaps collected for it: the chief distinctions lie in the few points of difference noticed in the above characters; in addition to which may be mentioned that it has more the habit of *C. paniculata*, forming, like it, "large has-socks of a foot in diameter and height, sometimes bearing two or three hundred stems, which with the foliage spread outwards from the centre of the tuft, and thus occupy a circle of nearly 8 feet in diameter." *Glumes* pale brown with a scarious margin; *fruit* with the edges blunt at the base, sharp and serrated from below the middle. As in *C. axillaris*, the lower spikelets are either entirely pistillate, or a few only of their upper glumes contain stamens; the upper spikelets have usually more numerous barren flowers. If *Mt. Gay* however be correct, foreign specimens have sometimes stamens towards the base of the spikelets.

15. *C. paniculata* (great paniced *C.*); spike paniced consisting of ovate spikelets arranged on elongated diverging branches of a common axis, fruit deltoid or subreniform plano-convex faintly many-nerved margined above and ending in an acuminate winged serrated bidentate beak, stem triquetrous with the angles very sharp and scabrous and the sides flat. *E. B. t. 1064.*

Swampy and spongy bogs. *4. 6.* — *Roots* densely tufted. Much larger than the two next, and rougher, often 5 ft. high. "Most unpleasant to handle, and of all the British species the most harsh and unmanageable:" *Wilson.* *Leaves* broad. *Spike* 2—4 inches long. *Bractes* ovate, acute or cuspidate, rarely foliaceous. Base of the fruit broad, truncated, with a central notch resembling the next, and less distinctly stipitate than *C. teretiuscula*, obscurely many-nerved on both surfaces. The ripe *achene* scarcely differs from what we observe in *C. paradoxo*, except by being usually a little more ovate, and bluntly triangular.

16. *C. paradoxa* Willd. (*paradoxical C.*); spike paniced consisting of spikelets arranged on short rather distant branches of a common axis, fruit deltoid gibbous on the back with numerous short prominent ribs near the base, beak bidentate serrulate, stem trigonous and scabrous in the upper part with convex sides. *E. B. S. t. 2896.*

Bogs. Ascham bog, and Heslington field, York. Ladiston near Mullingar, Ireland. *4. 7.* — Closely allied to the last and to the next species, but perhaps differing from both by constantly wanting a green line or keel on the convex side of the beak of the fruit; its fruit, too, is somewhat differently nerved from either. *Root* densely tufted,

like that of *C. paniculata*, and the *spike* almost as compound. *Stems* and *leaves* nearly as in *C. teretiuscula*; *leaves* slender rough at the edges, triquetrous at the end. *Fruit* obscurely stipitate, with about 7 nerves on the convex side, and 9 on the other, all disappearing about the middle. *Achene* unequally convex on both sides, broadly ovate, pointed with the inconspicuous base of the style, suddenly contracted below into a short stalk.

17. *C. teretiuscula* Gooden. (*lesser panicled C.*); *spike* compound oblong or cylindrical consisting of ovate compact compound or simple spikelets with acute membranous scales, fruit subplano-convex with 3—4 central nerves on the convex surface stipitate ovate ending in an acuminate winged serrulate bidentate beak, stems trigonous and scabrous in the upper part with convex sides. *E. B. t.* 1065.

Boggy, watery meadows, in various places. 4. 6. — This grows usually in separate tufts, with far narrower leaves than *C. paniculata*, of a glaucous hue, blunter stems, 18—30 inches high, their angles roughish. *Bracteas* membranous, ovate, the lowest sometimes foliaceous. *Spike* 1—1½ inch long. *Achene* narrow, obtuse, tapering at the base, bluntly triangular, turbinate. In this and in *C. paniculata* a central line goes from the convex surface of the fruit, along the back, which is sometimes winged and then gives the beak a triangular form; but we have often seen the beak as compressed as in *C. paradoxa*.

18. *C. vulpina* (great *C.*); spikelets compound collected into a cylindrical crowded spike, fruit ovate-acuminate plano-convex nerved longer than the glumes divergent, beak finely serrate bifid, stem very acutely triangular, the angles scabrous, leaves broad. *E. B. t.* 307. *C. nemorosa* Willd.

Wet shady places, especially near water. 4. 6. — Two feet or more high; stem stout, rough, as are the margins of the broad leaves. *Bracteas* small, setaceous. *Spike* large, greenish. *Fruit* pale, rough at the margin of the lengthened beak, and bifid at the point. *Achene* oval, compressed, with a beak.

\*\*\*\* *Spikelets* simple, alternate, sterile at their extremity. *Root* fibrous.

19. *C. divúlsa* Gooden. (*gray C.*); *spike* elongated lax consisting of 5—6 simple spikelets which are subremote below with pale membranous acute scales, fruit ovate acute suberect obscurely nerved rough at the point with blunt margins longer than the mucronate glumes, stem with rough angles. *E. B. t.* 629 (*young*). *C. muricata* β. Wahl.

Moist shady pastures, not rare. 4. 5, 6. — This species assuredly much resembles the next: in the fruit we can scarcely discern any difference, except that it is scarcely so acuminate, and is erect instead of diverging: the *achene* is rather narrower. The colour of the whole

plant is paler, the spikes more elongated and slender, with more distant spikelets.

20. *C. muricáta* L. (*greater prickly C.*); spike oblong of 4—6 compact or approximate simple spikelets with brownish ovate pointed scales, fruit ovate-acuminate spreading its acute rough margins longer than the mucronate glumes, stem with rough angles. *E. B.* t. 1097. *C. spicata* Huds.

Marshy and especially gravelly pastures.  $\mathcal{L}$ . 5, 6. — Stem 1—2 ft. high, slender. Bracteas small, lanceolate, subsetaceous. Fruit yellow-brown, broad, rather large.

\*\*\*\* Spikelets (simple) alternate, sterile at their extremity, Root creeping.

21. *C. arenária* L. (*Sea C.*); lower spikelets fertile, upper ones sterile, intermediate ones sterile at the end, all crowded into an oblong interrupted spike, fruit ovate with a membranaceous margin nerved shorter than the acuminate glumes, bracteas membranaceous lower ones somewhat leafy, stem triangular, leaves plane. *E. B.* t. 928.

Sandy sea-shore, frequent, where it is of great service in binding the soil.  $\mathcal{L}$ . 6. — Roots excessively long and creeping. Stems rough, 8 inches to a foot high. Fruit with a green membranous wing.

22. *C. intermédia* Gooden. (*soft brown C.*); lower and upper spikelets fertile, the intermediate ones sterile, all crowded into an oblong interrupted head, fruit with an acute narrow margin serrated upwards longer than the glumes whose midrib disappears below the summit, bracteas membranaceous the lower ones somewhat leafy, stem triangular with scabrous angles, leaves plane. *E. B.* t. 2042.

Marshy ground and wet meadows.  $\mathcal{L}$ . 6. — Root creeping, running deep into the mud. Stems 1—1½ foot high. Spikes, or heads of spikelets, similar in general appearance to the last. Fruit large, not so distinctly winged as gradually flattened towards the margin, more striated on its flat or inner side, the beak broader at its summit. Stem much taller and the leaves less confined to the lower part of it.

23. *C. divisa* Huds. (*bracteated Marsh C.*); spikelets crowded into a somewhat ovate head, the lower ones simple or compound with a leafy erect bractea at their base, glumes with excurrent midrib, fruit roundish-ovate convex on one side slightly concave on the other, beak acutely bifid with finely serrated edges, stem roughish at the summit. *E. B.* t. 1096.

Marshy places, especially near the sea, principally in the east of England, and in Angus-shire.  $\mathcal{L}$ . 5, 6. — Stems about 1 foot high; lower bracteas mostly with a long leafy point.

iv. Terminal spikelet androgynous, the rest fertile. Stigmas 3.

24. *C. Váhlii* Schkh. (*close-headed Alpine C.*); spikelets 1—4

roundish or oblong aggregated the terminal one with barren flowers at its base, stigmatic 3, fruit obovate triquetrous with a short notched beak scabrous above with crystalline points longer than the ovate somewhat obtuse glume, stem triangular rough at the edges towards the summit. *E. B. S. t.* 2666. *C. alpina* Vahl.

Rocks above the head of Loch Callater in Braemar; Glen Fiadh (Fee) on the south side of Glen Dole, Clova. *¶.* 7.

25. *C. canescens* L. (*hoary C.*); spikelets 3—5 oblong, terminal one barren at the base, fertile sessile contiguous to the upper one except the lowest which is on a short stalk and sub-reinote, fruit oblong-oval obtuse compressed at length trigonous nerved bidentate rough with crystalline points shorter at the base of the spikelet than the ovate or oblong cuspidate scales. *C. Buxbaumii* Vahl.: *E. B. S. t.* 2885. *C. polygama* Schk. *X. G. g. f.* 76.

On a small island near Toom Bridge, in Lough Neagh, Ireland. *¶.* 7. — *Root* creeping. *Stem* 1—2 ft. high, erect, acutely triangular, rough, leafy at the base, and clothed with purple sheaths which are torn and reticulated at their edges. *Leaves* straight, shorter than the stem. *Middle spikes* smallest, more or less approximate. *Bracteas* rough, auricled, but without sheaths, the lowest sometimes longer than the stem, upper ones setaceous. *Fruit* glaucous-green, stained with brown, shorter at the base of the spikelets than the cuspidate scales, which are brown with a pale green nerve. — Linnaeus confounded *C. alpina* Vahl (*C. Vahlii* Schkh.) and *C. curta* Good, with this species. The specimens from Lapland are of the present plant. *C. curta* was described by the late Bishop of Carlisle, in the *Linn. Trans.* v. ii. p. 145. in 1792, eleven years before Wahlberg, in *Act. Holm.* (1803), described the present species under the name of *C. Buxbaumii*. The original name of *C. canescens* must be restored to it: *Boott*. The term *canescens* is, however, not so applicable to this species as to *C. curta*, and were it not for Dr. Boott's high authority, we should drop it entirely.

26. *C. atrata* L. (*black C.*); spikelets 3—4 oblong, terminal one barren at the base fertile contiguous shortly-stalked inclined, lowest one on a longer stalk and rather distant at length drooping, lower bractea foliaceous, sheaths scarcely any, fruit elliptical triquetrous (when ripe) broader but rather shorter than the acute glumes, beak terete short bifid at the point. *E. B. t.* 2044.

On the Welsh mountains; 'Snowdon, rare. Rocky cliffs on the top of a hill near Hartfell, Dumfries-shire; Breadalbane, Clova, and other Highland mountains, Scotland. *¶.* 6, 7. — About 1 foot high. *Leaves* unusually broad for the size of the plant. *Glumes* dark brown, opaque. *Fruit* pale yellowish-brown, at first compressed, but as it ripens exhibiting 3 angles towards the base, at length triquetrous.

v. *Terminal spikelets barren, 1—3 (or more); the rest fertile. Stigmus 2.*

27. *C. vulgaris* Fries (*common C.*); spikelets cylindrical erect, 1 rarely 2 barren, fertile 3—4, lower one shortly stalked, sheaths none, lower bractea subfoliaceous with small round dark auricles, glumes elliptic or oblong obtuse, fruit plano-convex elliptic or obtuse with filiform nerves which disappear upwards and an obsolete or evident entire beak. *C. cæspitosa* Good.: *E. B. t.* 1507. *C. angustifolia* Sm. in *E. Fl.* iv. p. 127. *C. Goodenovii* Gay in *Ann Sc. Nat.* 2d ser. xi. p. 191.

Marshes and wet pastures, frequent.  $\frac{1}{2}$ . 5, 6. — A foot or more high. *Stem* weak, acutely triangular. *Root* creeping, laxly cæspitose. *Leaves* slender, their *sheaths* not filamentous. *Fruit* posteriorly flat, 3—5-nerved, anteriorly convex, 7—9-nerved. *Achenes* roundish, obtuse, with a short slender beak. We adopt the name given to this extremely common, but confused species, by Fries, being certainly older than that of Gay (1839).

28. *C. rigida* Good. (*rigid C.*); spikelets cylindrical or oblong, barren 1, fertile 2—4, lower one shortly stalked, sheaths none, lower bractea subfoliaceous with small black subrotund auricles, glumes elliptic or oblong obtuse black, fruit oblong or elliptic obtuse plano-convex without nerves with an obsolete entire beak. *E. B. t.* 2047. *C. saxatilis* Fl. Dan. (not L.)

On Snowdon, the Cheviots, Hartfell, Dumfries-shire, and especially the summits of all the more elevated Highland mountains.  $\frac{1}{2}$ . 6—8. — *Stems* 4—6 inches high, laxly cæspitose. *Leaves* flat, about as long as the firm acutely-triangular *stem*, which is rough at top. *Achenes* roundish, obtuse, with a slender beak.

29. *C. aquatilis* Wahl. ? (*straight-leaved Water C.*); spikelets erect, 1 or more barren, fertile 3—4 nearly sessile cylindrical elongated attenuated below often acuminate with barren flowers at the extremity, sheaths none, bracteas long foliaceous, fruit roundish-obovate without nerves broader than the glumes with a very short entire beak, stem smooth obtusely triangular, leaves long straight narrow-linear, sheaths not filamentous. *E. B. S. t.* 2758. *C. rigida*  $\beta$ . Hook. Br. Fl. ed. 2. p. 397. *C. cæspitosa* Fries ?

On table-land in boggy situations in the mountains of Clova; and in the valley by the bridge at Clova.  $\frac{1}{2}$ . 7, 8. — *Stem* 1—2 ft. high. *Achene* "roundish-obovate, blunt with a short beak." Dr. Boott doubts if this be really the *C. aquatilis* of Wahlenberg, since that author describes his plant as having scales much narrower than the fruit, which is not the case here, and the place of growth and size being so very different; "in ipsis fluviis et lacubus"—"sæpe altitudinem humanam attingens"—"ad radicem sæpius pollicem crassa." Its affinity is with *C. acuta*.

30. *C. acuta* L. (*slender-spiked C.*); spikelets cylindrical elon-

gated slender, barren 1—3, fertile 3—4 more or less remote and barren at top, lower pedunculated often attenuate and interrupted at the base, sheaths none, bracteas long foliaceous, lower often surpassing the stem with pale or ferruginous elongated auricles, fruit oval biconvex nerved green with rusty stains, beak short entire, glumes dark lanceolate fertile ones acute. *E. B. t. 580. C. gracilis Curt.*

Moist meadows and wet pastures, frequent. *4. 5.*—Stems 2—3 ft. high. Stem acutely triangular, rough. Leaves broad, flat, sheathing, in 3 rows, green. Fertile spikelets often very long, verticillate at the base, and pendulous in flower. Glumes about as long as the fruit, generally longer at the base of the spikelets, and shorter near the summit, but variable in that respect.

31. *C. Gibsoni* Bab. (*Gibson's C.*); "spikelets erect, barren 1, fertile 2—4 narrowed downwards slightly stalked, bracteas foliaceous with short auricles, fruit lanceolate acute with many nerves not reaching the summit and a short entire beak, achene broadly obovate very blunt with a short thick beak, stem acutely 3-angular or triquetrous rough towards the top." *Bab. in Ann. Nat. Hist. xi. t. 5.*

Hebden Bridge, Yorkshire. *4. 6.*—Creeping. Stems 6—8 inches high. Leaves flat; sheaths not filamentose. Glumes a third shorter than the fruit, which is gradually narrowed from below the middle to the top and nearly twice as long as the achene. — With this we are not acquainted: the normally short fruit of several species frequently becomes under certain circumstances elongated and lanceolate; and that this species is in an abnormal condition is shown by the perigynium having lengthened out much beyond the achene. Dr. Boott suspects it to be *C. acuta*, and there seems no reason why it should not. It is said to be now lost by drainage; but may it not have reverted to its usual state, and be still in the neighbourhood?

32. *C. caespitosa* L. (*tufted Bog C.*); spikelets cylindrical, barren 1 rarely 2, fertile 2—3 often approximate erect thickish, lower one very shortly pedunculate or sessile, upper often barren at top, sheaths none, lower bractea subfoliaceous abbreviate with large oblong pale auricles, fruit compressed elliptic or oblong closely imbricated nerved generally longer and broader than the black oblong obtuse or lanceolate scale, beak short entire. *Gay in Ann. Sc. Nat. 2d ser. xi. p. 194. C. stricta Good. (1792) (not Lam.): E. B. t. 914.*

Marshes, common. *4. 4—6.*—Stems 2 ft. or more high, densely caespitose. Leaves subconduplicate, narrow, glaucescent, shorter than the firm acutely triangular rough stem; sheaths filamentose. Fruit whitish, pulverulent, deciduous, always compressed, in 8—9 rows. — The name, and the remarks of Linnæus (*Iter Scania, p. 207. 241.*), clearly refer to this species. He confounded it with *C. Goodenovii* Gay, of which a specimen alone exists in his Herbarium. Hence Goodenough naturally considered it the true *C. caespitosa* L.,



and called the present species *C. stricta*; a name, however, that had been given to an American species by Lamarck three years before Goodenough's paper on British *Carexes* was read to the Linnæan Society.<sup>1</sup>

33. *C. saxatilis* L. (*russet C.*); barren spikelets 1 or rarely 2, fertile ones ovate obtuse erect the lowest stalked with a foliaceous bractea, sheaths none, glumes oblong, fruit spreading ovate inflated nerved (nerves often obsolete) with a very short beak bifid at the point, leaves acuminate with trigonous points. —*α*. fruit usually obscurely nerved chestnut-brown, glumes dark purple tipped with white, their midrib dark purple. *C. pulla* Gooden. *E. B. t.* 2045. —*β*. taller, fruit prominently nerved green or brown twice as long as the glume, glumes fuscous the tip and midrib pale. *C. Grahamii* Boott in *E. B. S. t.* 2923.

Near springs, on the higher regions of the Scottish mountains. Ben Lomond; Breadalbane range, not unfrequent; Cairn Garadh, near Ben Nevis; mountains about Loch Scavig in Skye. —*β*. Glen Fiadh, Clova. Ben Cruban near Killin; *Dr. Balfour*. — *γ*. 6, 7. —*α*. Stem 6—8 inches (or in *β*. sometimes 2 feet) high. Leaves remarkably acuminate, slightly keeled at the back, with trigonous points, resembling some of the narrow-leaved species of *Eriophorum*. Spikes almost shaggy with the long white stigmas. Scales shining, of a deep chocolate-brown, paler in *β*. Fruit at first pale, dark brown when ripe, usually much paler in *β*. Our var. *α*. is proved, from the Linnæan Herbarium, and by a specimen in the Banksian Herbarium from Dr. Solander, to be the true *saxatilis* of Linnæus (not of Eder), a plant which has been greatly misunderstood: Boott. As to *β*, the habit is considerably different, the fruit larger and longer, but we can find no certain character by which to separate it, except that the nerves of the fruit (*perigynium*) are very prominent and conspicuous the whole length, whereas in *α*. they are so obscure, particularly in the upper part, that some authors describe its fruit as quite free from nerves. Dr. Boott considers it identical with *C. vesicaria* *β. alpigena* Fries, which we presume is the same as that of Wahlenberg; but Wahlenberg places it among those with 3 stigmas. The Lapland specimens which we have seen are not sufficiently perfect to enable us to ascertain that point; the habit is certainly not very different; but whatever becomes of our var. *β*., we can trace no resemblance in it to *C. vesicaria*, except in the general form of the fruit.

<sup>1</sup> Fries still retains the name of *stricta* for this species, and considers the *C. caespitosa* L. to be different both from it and from *C. vulgaris*, though nearer the latter: he pronounces it a native of this country, on the authority of a specimen from Dr. Greville: his character is as follows:—*C. caespitosa* L.; spikes erect near together, barren solitary, fertile subsessile oblong, bracteas with long serrules the lowest only leaflike slender and short, fruit elliptical acute biconvex not nerved somewhat patent, teeth short entire, glumes lanceolate (dark purple with a paler keel), sheaths of the leaves with a slight web, stems slender triquetrous. *C. pacifica* Drej.

The plant sent by Dr. Greville was, we believe, our *C. aquatilis*; with which, however, this character does not quite agree as to the bracteas.

- vi. *Terminal spikelet barren, solitary (sometimes 2 in 38, 39, and 53). Fruit glabrous (or scabrous in 53). Stigma 3.*

\* *Fertile spikelets abbreviated and erect, (in 41 longish and sometimes drooping).*

34. *C. palléscens* L. (*pale C.*); barren spikelet 1 sessile, fertile spikelets pedunculated oblong-cylindrical approximate scarcely pendulous much longer than the very short sheaths, bractæas foliaceous, fruit obovate-elliptical tumid striated obtuse glabrous. *E. B. t. 2185.*

Marshy places; frequent. 4. 6. — A foot or more high. *Leaves* slightly downy. *Spikes* obtuse, pale green. *Fruit* very obtuse, without a beak. *Achene* narrow-elliptical, tapering at both ends.

35. *C. exténsa* Gooden. (*long-bracteated C.*); sheaths very short (scarcely any) with extremely long foliaceous bractæas, fertile spikelets nearly sessile oblong, glumes slightly mucronate, fruit ovate ribbed with a short straight smooth acuminate beak bifid at the point, leaves very narrow, stem smooth. *E. B. t. 833.*

Marshes, rare, near the sea, on the E. and S. of England. Near Liverpool and shores of the Menai. Coast of Fifeshire, Ayrshire, &c., Scotland. Ireland. 4. 6. — About 1 foot high. Quite distinct from *C. flava*, with which it has been confounded, in its very narrow convolute *leaves*, never spreading and short-beaked *fruit*. *Achene* oblong-elliptical, tapering at both ends, triangular and smooth. This species has been said to grow plentifully above the fall of the Grey-mare's Tail near Moffat, Dumfriesshire, but this is surely a mistake.

36. *C. flava* L. (*yellow C.*); sterile spikelet cylindrical obtuse, fertile spikelets roundish-oval nearly sessile, lowest with a nearly included stalk, glumes obtuse, bractæas long leafy, fruit obovate turgid ribbed spreading with a long more or less deflexed or straight beak bifid at the point, stem bluntly triangular smooth. —  $\alpha$ . sterile spikelets distinctly stalked, fertile ones rather distant, beak of fruit deflexed. *E. B. t. 1294.* —  $\beta$ . spikelets all approximated, beak of fruit straight. *C. Ederi Ehrh.: E. B. t. 1778.*

Turfy bogs, frequent. —  $\beta$ . moist sandy places or heaths. 4. 5, 6. — *Stems* 6—8 inches or a foot high. *Bractæas* very foliaceous, the lower one resembling the broad acuminate *leaves*. *Spikelets*, and indeed the whole plant, of a yellowish hue. *Achene* obovate, with 3 nearly equal flat sides and thick angles, very minutely and closely dotted with impressed points, at length nearly quite smooth.

37. *C. fulva* Gooden. (*tawny C.*); sterile spikelets 1 or rarely 2, fertile ones oblong-oval distant, sheaths elongated shorter than the peduncles, bractæas foliaceous, fruit broadly ovate ascending glabrous ribbed acuminate into a straight rough-edged beak

bifid at the point, glumes acute (not mucronate). — *α.* stem acutely 3-angular scabrous. *E. B. t.* 1295. — *β.* stem bluntly 3-angular smooth or scabrous near the summit, fertile spikelets on longer stalks, beak smoother with a more distinct membranaceous orifice. *C. speirostachya Sw.: E. B. S. t.* 2770. *C. Hosteana DC. C. Hornschuchiana Hoppe.*

Boggy meadows, not unfrequent. — *β.* Mugdock Castle, and elsewhere, especially in the west of Scotland. *γ.* 6. — *Stem* 1 ft. high, with the habit of *C. distans*, but smaller; with shorter, more lax, paler-coloured and fewer-flowered spikes, and acute, not mucronate, glumes.

38. *C. punctata* Gaud. (dotted-fruited *C.*); barren spikelet 1 rarely 2 with obtuse ferruginous scales, fertile 3 rarely 4 cylindrical erect stalked with sheathing bractæas, fruit ovate tumid glabrous shining pellucidly punctate diverging of a light green obsoletely nerved except at the margins with a linear bidentate beak larger than the ovate short aristate scales, which are pale ferruginous with a green nerve. *Boott.—Schkh. Car. Suppl. tab.* 6. f. 1. *C. Helvetica Schleich. C. distans β. Deslongch. Fl. Gall. p.* 297.

Marshy grounds near the sea, about a mile W. of Charlestown, Cornwall. Beaumaris, N. Wales; banks of the Menai, near Bangor. Vazon bay, Guernsey. — *Root* creeping, composed of strong woody fibres. *Stem* 12—18 inches high, erect, smooth, leafy at the base. *Leaves* shorter than the stem. *Barren spikelets* rarely geminate: glumes rarely acute or subaristate, the lowest sometimes bractæiform: fertile more or less remote, the two upper subapproximate, the lowest rarely 3 inches from the middle one. *Bractæas* with striated sheaths, varying in length. *Peduncles* rough. *Beak* about one third the length of the fruit. *Achææ* triangular, ovate-rhomboidal, very minutely and closely dotted, but not “pellucidly punctate, like the fruit.” — Differs from *C. distans* in its smaller size, its light green, more approximate spikes, its more erect stem, and in its fruit. In some of Mr. Babington's specimens from Guernsey, the fruit is sometimes oblong, not tumid, and marked with several conspicuous ribs; but the specimens are imperfect, and may belong to another species.

39. *C. distans* L. (loose *C.*); barren spikelets 1—2 on long stalks with obtuse scales, fertile 2—3 remote erect oblong stalked the lower stalks about twice longer than the sheathing bractæas upper ones included, glumes mucronate, fruit ovate triquetrous equally ribbed pellucidly punctate smooth or rough at the upper margins and at the edges of the narrow short bifid beak. *Boott.—E. B. t.* 1234.

Muddy marshes near the sea, probably in many places. • About Anglesea: with *C. binerv.* in boggy ground, east of Kent. Coast near Montrose; near Inverkeithing, Fifehire; Edinburgh. *γ.* 6. — *Stems* 8 inches to 1 or 1½ foot high, slender. *Spikelets* very distantly placed, their rather long peduncles entirely concealed by the sheathing bases of the bractæas. *Glumes* rather pale brown. *Fruit*

green, inclining to brown when ripe. *Achene* obovate-rhomboidal, pointed at both ends, nearly smooth.

40. *C. binervis* Sm. (*green-ribbed C.*); barren spikelet solitary with obtuse scales, fertile 3—5 the upper ones sometimes subapproximate, the lower remote erect cylindrical often elongated bearing barren flowers in their upper half and some of them occasionally compound at the base, the lower stalks longer than the sheathing bracteas, glumes mucronate, fruit ovate-triangular with a smooth rather broad bifid beak, and two principal green submarginal nerves on the outer surface, beak broad bifid. *Boott.*—*E. B.* t. 1235.

Dry heaths and moors, frequent. *4.* 6. — Generally taller, and in every part more rigid, than the last. *Glumes* and especially the *fruit*, more highly coloured, the latter more acutely triquetrous with two nerves near the margin on the back, which are always green, though the rest of the fruit be more or less brown. But there are states, of which we scarcely know whether they should be referred to the one species or to the other.

41. *C. lævigata* Sm. (*smooth-stalked beaked C.*); fertile spikelets remote erect or drooping cylindrical stalked, stalks longer than the elongated sheaths, bracteas foliaceous, all the glumes acuminate or mucronate, fruit ovate triangular striated with rather a long acuminate beak deeply bifid at the point. *E. B.* t. 1387.

Marshes and boggy thickets, in several places both of England and Scotland. Anglesea. Near Belfast. *4.* 6. — *Stem* 2—3 ft. high. *Leaves* broad, but rather short. There is rarely more than one *sterile spike*, which is always triquetrous, with obtuse or sometimes acute *glumes*. *Achene* narrow-obovate. Often in the young state confounded with *C. sylvatica*, and then most easily distinguished by its more compact spikelets and darker glumes; it flowers too a month later.

42. *C. panicæa* L. (*Pink-leaved C.*); barren spikelet solitary, fertile ones about 2 subcylindrical lax-flowered distant stalked, the stalks longer than the close elongated sheaths, bracteas leafy, fruit subglobose somewhat inflated obtuse glabrous with a short terete truncate beak. *E. B.* t. 1505.

Marshy places and bogs, common. *4.* 6. — *Stems* 1—1½ ft. high. *Leaves* rather broad, glaucous, rough at the edges, much resembling, as Sir J. E. Smith observes, the foliage of *C. recurva*; but the characters of the two are widely different. *Glumes* dark brown, the keel green. *Fruit* greenish-brown.

43. *C. vaginata* Tausch (*short brown-spiked C.*); barren spikelet solitary, fertile ones 1—3 subcylindrical erect lax-flowered distant stalked, the stalks longer than the elongated loose sheaths, bracteas subfoliaceous, fruit smooth obsolete-nerved elliptic-lanceolate with an acuminate obliquely bifid recurved beak longer than the ovate glume. *C. phæostachya* Sm.: *E. B.*

*S. t.* 2731. *C. salina* Don: *Herb. Brit.* n. 216. *C. Mielichoferi* Sm. (not Schk.): *E. B. t.* 2293. *C. Scotica* Spreng. *C. panicea* β. Wahl.

Highland mountains. Craig Cailleach and Corrach-uachdar, near Killin; Cairngorum and Ben Mac Duibh, Aberdeenshire; about the falls at the head of Glen Fiadh, and in the ravines of the White Water, Clova. *tl.* 7. — In deference to the opinion of Mr. Borrer, we rank this as a species; but it is probably only a var. of *C. panicea*, with less glaucous (greener) herbage and a bifid oblique beak to the fruit. Mr. Borrer's specimen from Craig Cailleach was long the only authority for *C. Mielichoferi* of Smith; but within these few years it has been again met with there, thus proving it without doubt to be the same as *C. phæostachya* Sm. This last name was only published in 1828, and Sprengel's in 1826, while Tausch's having been given in 1821, we adopt it.

44. *C. depauperata* Gooden. (*starved Wood C.*); fertile spikelets erect remote with very few (3—4) flowers, the stalks much longer than the sheaths, bractæas foliaceous, fruit large nearly globose inflated terminating in a long beaked bifid beak with rough edges. *E. B. t.* 1098.

Dry woods, rare. Godalming, Surrey; Charlton wood, Kent. Near Forfar; *G. Don.* *tl.* 5, 6. — *Stem* 1—1½ ft. high. *Spikelets* very distant; their few flowers, and large inflated beaked fruit, decidedly marking the species. Mr. Don cultivated it in his garden, which we fear was the only locality for it near Forfar.

**\*\* Fertile spikelets abbreviated, stalked, drooping.**

45. *C. capillaris* L. (*dwarf capillary C.*); fertile spikelets few-flowered lax drooping, the stalks twice as long as and included within a common sheath, fruit oblong-obovate with a short beak rather longer than the membranaceous ovate obtuse deciduous glumes. *E. B. t.* 2069.

Plentiful on some of the Highland mountains, especially the Breadalbane range. Ben-Ghlò Hart-fell, Dumfriesshire. *tl.* 6, 7. — *Stem* 2—6 inches high. *Leaves* mostly radical, scarcely half the length of the stem, soft. One single bractea includes, with its sheathing base, the lower part of all the peduncles, which are thus somewhat corymbose; rarely there is a distant fertile spikelet. *Sterile spikelet* single, frequently on a shorter stalk than the others, and therefore appearing as if below them. *Fruit* dark brown, shining. *Achene* obovate.

46. *C. rariflora* Sm. (*loose-flowered Alpine C.*); fertile spikelets 2—3 upon long stalks narrow-oblong very few-flowered lax drooping, sheaths very short mostly membranous, bractæas subsetaceous, fruit bluntly triangular ovate with a short entire beak faintly nerved nearly as long as the glume, glume very broad and concave obtuse minutely apiculate folded round the fruit. *E. B. t.* 2516. *C. limosa* γ. Wahl.

Bogs, rare. Head of Glen Dole, south-east side of the Little Culrannoch, and head of Canlochan, Clova mountains; also in Sutherland, as Oikel, Ben Hope, Ben Lyal, &c. 4. 6.—*Root* creeping. *Stems* about 6 inches high. *Leaves* about half an inch long, but broader than those of the next, with which it has been united by both Wahlenberg and Kunth. *Glumes* obtuse, very deep brown, with a pale dorsal nerve usually running out and forming a very minute mucro at the end, forming a striking contrast with the pale coloured fruits.

47. *C. limosa* L. (*Mud C.*); fertile spikelets 1—3 upon very long stalks oblong-ovate densely flowered drooping, sheaths very short, bractæas subsetaceous or lower ones leaflike, fruit roundish compressed ribbed with a very short entire beak, about as long as or shorter than the ovate pointed glume. — *α.* leaves narrow-linear channelled rough at their edges throughout, bractæas subsetaceous, lower glumes slightly acuminate scarcely longer than the strongly ribbed fruit, upper ones longer and narrower. *E. B. t.* 2043. — *β. irrigua*, leaves broader flat rough only near the point, the lower bractæas foliaceous, lower glumes ovate- or narrow-lanceolate much acuminate longer than the faintly ribbed fruit, upper ones often broader and shorter. *C. irrigua Hoppe: E. B. S. t.* 2895. *C. limosa β. Wahl.*

Bogs and marshes. Rare in England, mostly found in the northern and mountainous parts; more frequent in Scotland and Ireland. — *β.* Muckle Moss, Northumberland. Terregles, Dumfriesshire; "Benina" near Loch Lomond; Clova mountains. 4. 6.—*Root* creeping. *Stems* 8—10 inches high. *Leaves* very narrow. *Fertile spikelets* usually 2. *Glumes* dark brown, subapiculate. *Fruit* greenish-brown. In *β.* the lower *glumes* are usually very narrow and much attenuated, becoming broader and shorter upwards, while this proportion is reversed in *α.*: in both the narrowest glumes are either empty or with stamens, and the broadest are scarcely so broad as the fruit.

48. *C. ustulata* Willd. (*scorched Alpine C.*); fertile spikelets about 3 oval densely-flowered drooping, the stalks about twice the length of the loose sheaths, bractæas setaceous, fruit elliptical compressed (black) shortly acuminate rough at the edges near the apex, beak bifid at the point, glumes ovate-oblong acuminate narrower and rather shorter than the fruit. *E. B. t.* 2404. *C. atrofusca Schk.*

Ben Lawers, very rare; *G. Don.* 4. 7.—*Root* tufted and scarcely creeping. *Stem*, in the only Scotch specimen we have seen, about 6 inches, in Lapland ones almost a foot high. *Leaves* short, broad, principally from near the root. *Fertile spikelets* 2, usually 3, on slender drooping stalks, and of a deep purple-black colour; barren ones rather smaller and of a dark rusty-brown. *Fruit* very obscurely nerved, perhaps nerveless.

\*\*\* Fertile spikelets elongated (sometimes short in 53), stalked, drooping.

49. *C. strigosa* Huds. (*loose pendulous C.*); barren spikelets solitary, fertile about 4 slender filiform loose-flowered nearly erect, the lower stalks a little longer than the elongated sheaths upper about equal to their bracteas foliaceous, glumes elliptic-lanceolate diaphanous with a green keel, fruit oblong-lanceolate acuminate at both ends nerved slightly recurved truncated at the point, beak scarcely any, leaves rather broad. *E. B. t.* 994.

Groves and thickets, in several parts of the east and middle of England. Cotterell wood, Cheshire. Arniston woods, Edinb. 4. 5, 6. — Stem 1—2 feet high. Glumes a little shorter than the fruit.

50. *C. sylvatica* Huds. (*pendulous Wood C.*); barren spikelets solitary, fertile about 4 filiform rather slender loose-flowered slightly drooping, stalks about twice as long as the elongated sheaths, bracteas foliaceous, glumes ovate acute diaphanous with a green keel, fruit broadly ovate acuminate, beak long smooth cleft at the point, leaves narrow. *E. B. t.* 995.

Moist woods, frequent. 4. 5, 6. — Similar to the last; but the spikelets are shorter, broader, and on longer stalks; fruit very different, glabrous, and so acuminate as to terminate in a long beak. Glumes longer in proportion. Spikelets sometimes compound. Linnæus tells us that this plant, when carded and dressed, is employed by the Laplanders to protect their feet from the cold.

51. *C. pendula* Huds. (*great pendulous C.*); barren spikelets solitary, fertile 4—6 cylindrical densely-flowered very long and drooping, sheaths nearly equal to the stalks lower elongated upper very short, glumes ovate mucronate, fruit ovate with a short trigonous notched beak, leaves broad. *E. B. t.* 2315.

Moist wooded and shady places, not very general. 4. 5, 6. — Stem 3—5 ft. high. Well distinguished by its long, pendulous, cylindrical spikelets, and closely imbricated fruit. Achens elliptical, pointed at both ends.

52. *C. Pseudo-cyperus* L. (*Cyperus-like C.*); barren spikelets solitary, fertile 3—6 densely-flowered cylindrical upon long footstalks drooping, bracteas very leafy, lowermost sometimes sheathing the others without sheaths, glumes setaceous scabrous, fruit oblong very much acuminate ribbed, beak long deeply cloven. *E. B. t.* 242.

Moist places, by the sides of lakes and ponds; not very general. 4. 6. — Stem 2—3 feet high, acutely triangular. Leaves 1/2 an inch broad. One of the best marked and most beautiful of the genus.

53. *C. glauca* Scop. (*glaucous Heath C.*); barren spikelets

1—3, fertile 2—3 cylindrical or ovate at length drooping densely-flowered on long slender stalks, sheaths short scarcely any, bracteas foliaceous, glumes ovate, fruit obovate-globose scabrous or smooth, beak very short entire. — *α*. fertile spikelets cylindrical, glumes acute. *C. recurva* Huds.: *Sm.* *E. B.* t. 1506. — *β*. fertile spikelets cylindrical, glumes obtuse, fruit smaller. *C. Micheliana* Sm.: *E. B.* t. 2236. — *γ*. fertile spikelets ovate. *C. stictocarpa* Sm.: *E. B. S.* t. 2772.

Moist meadows, moors, groves and alpine rocks. *℥. 4, 5.* — *Leaves* mostly radical, very glaucous. *Stems* usually about 1 foot, sometimes 2 ft. high. *Fruit* closely placed, brownish when ripe, closely dotted with depressed points, often pellucid, punctate when young, usually scabrous with a kind of abortive pubescence, or rather scattered papillæ, which are sometimes quite wanting in *γ*. (as in specimens from Canlochan) which is the form figured by Don, but sometimes present in specimens from the Devil's Kitchen, as well as from Glen Callater in the Clova mountains. Scopoli's name (1772) is not only older than Hudson's (1798), but more expressive.

vii. *Terminal spikelets* (1 or more) barren. *Fruit* hairy or downy. *Stigmas* 3.

54. *C. præcox* Jacq. (*vernal C.*); barren spikelet solitary, fertile 1—3 oblong approximate sessile or the length of the sheath, lowermost sheath short (scarcely any), lower bracteas leafy short, glumes broadly ovate acuminate, fruit downy obovate-oblong scarcely acuminate truncated at the point trigonous the sides nearly flat, root creeping. *E. B.* t. 1099.

Dry pastures and heaths. *℥. 4, 5.* — *Stems* 3 inches to a foot high. *Leaves* short, rather broad. *Lower bracteas* small, but leafy; upper ones very minute. *Achenes* obovate-oblong, trigonous, with nearly flat sides. The numerous yellow *anthers* are conspicuous at an early season of the year.

55. *C. collina* Willd. (*mountain C.*); barren spikelets solitary quite sessile with obtuse or retuse glumes, fertile 1—3 roundish approximate sessile, sheaths short membranaceous lowermost with usually a subulate bractea, glumes broadly ovate usually emarginate mucronate, fruit very downy obovate-oblong trigonous the sides nearly flat, beak very short notched, root tufted fibrous. *C. montana* Schk.: *E. B. S.* t. 2924. *C. pubescens* Gaud.

In a field by the roadside towards Eridge, about a mile south of Tunbridge Wells, Sussex; Limestone Wood between Tintern and S. Arvans about 4 m. from Chepstow, Monmouthshire. *℥. 4, 5.* — *Root* somewhat creeping, but tufted. *Stems* 4—7 inches high. *Leaves* narrow. *Fruit* densely pubescent, almost hairy, whitish, the beak with a dark purple margin at its mouth. *Achene* obovate-oblong, triangular, with a stout trigonous beak that projects beyond the mouth of the perigynium. Of this we have not seen British specimens, so



that our character is derived from Swiss ones; there seems however no doubt of this being the species met with in the two above-mentioned stations. Smith has shown (*E. Fl.* iv. p. 113.) that *C. montana* L. is the same as *C. pilulifera*; and the name having been applied to several other species, it is preferable to adopt that given by Willdenow.

56. *C. pilulifera* L. (*round-headed C.*); barren spikelets solitary with acute glumes, fertile 1—3 roundish approximate sessile, sheaths none, lowermost bractea subulate scarcely foliaceous, glumes broadly ovate mostly acuminate, fruit downy obovate-globose with 2 principal opposite ribs the sides rounded, beak short bifid, root tufted fibrous. *E. B.* t. 885. *C. montana* L. *C. filiformis* *Fl. Dan.* t. 1048.

Moory ground, frequent. *fl.* 6. — *Stems* varying much in height, from 6—12 inches, slender. *Achene* subglobose, acuminate at the base, pointed with the stout base of the style which seldom projects beyond the mouth of the perigynium.

57. *C. clandestina* Gooden. (*dwarf silvery C.*); barren spikelets solitary, fertile 1—3 stalked remote about 3-flowered concealed by the membranaceous sheaths of the leafless bractea, fruit broadly obovate-triangular slightly downy contracted at the base with an entire oblique mouth, leaves longer than the stems channelled rough rigid. *E. B.* t. 2124. *C. humilis* Leyss. *C. argentea* Vill.

On the limestone rocks at St. Vincent's, Bristol; Downs near Boyford, and in great abundance on Salisbury Plain, between Stonehenge and Heytesbury, Wiltshire; Brean Down, Weston-super-mare. *fl.* 5. — Remarkable for the few flowers of its fertile spikelets, which are concealed by the comparatively large membranaceous sheaths, as the short stems are by the leaves. The name given by Leysser is unquestionably the oldest, but has been generally abandoned in favour of the much more expressive one of *clandestina*.

58. *C. digitata* L. (*fingered C.*); barren spikelet solitary sessile, fertile 2—3 distant on long stalks erect filiform lax longer than the barren one, sheaths membranaceous obliquely truncate, lower ones with a setaceous bractea, glumes broadly obovate apiculate about the length of the fruit, fruit obovate-triangular downy on a short stalk, beak short nearly entire, leaves plane. *E. B.* t. 615.

Rare, in woods in limestone countries. Near Bath and Bristol; Wind Cliff, Monmouthshire; limestone ledges of Clatons Hill, 4 m. from Cheltenham; Thorp-arch and Mackershaw wood, Ripon, Yorkshire. *fl.* 5. — Root of tufted fibres. Stem 8—10 inches high. Leaves soft, shorter than the stem. *C. ornithopoda* Willd. merely differs from this by the fertile spikelets being usually 4 and all approximated, and the fruit twice as long as the glume; it is probably a variety, but has not been observed in this country.

59. *C. tomentosa* L. (*larger downy-fruited C.*); glabrous, barren spikelets solitary with ovate-lanceolate glumes, fertile 1—2 somewhat approximate nearly sessile shortly cylindrical obtuse, sheaths scarcely any, lowermost bractea foliaceous, glumes broadly ovate acute, fruit densely downy obovate sub-trigonus with rounded sides, slightly notched at the point with scarcely any beak, root creeping, fruit globose densely downy with a short beak scarcely bifid at the point. *E. B. t.* 2046.

Meadows near Merston Measy, Wiltshire: *Mr. Teasdale*, 1799. (Gathered there again by *Mr. Borrer* in 1838.) *Æ.* 6. — A well marked and very rare species, no station but the above-mentioned being known for it in Britain.

60. *C. filiformis* L. (*slender-leaved C.*); glabrous, barren spikelets 2 with oblong-lanceolate somewhat acute glumes, fertile 2—4 distant nearly sessile oblong-cylindrical, sheaths scarcely any, bracteas foliaceous long and narrow, glumes oblong-ovate cuspidate, fruit very pubescent ovate-oblong tapering into a short deeply bifid beak, leaves slender channelled, root creeping. *E. B. t.* 904.

Boggy marshes, rare; chiefly found in Scotland. Cheshire and Anglesea. *Æ.* 5. — *Stem* 1—2 ft. high. *Leaves* slender, their margins involute, filamentous at their bases near the roots. Closely allied to *C. tomentosa*, with which it was confounded by Lightfoot and Hudson.

61. *C. hirta* L. (*hairy C.*); hairy, barren spikelets 2—3, fertile 2—3 distant stalked nearly erect cylindrical, sheaths elongated, bracteas long foliaceous, glumes elliptic-lanceolate much acuminate ciliate towards the point, fruit oblong-ovate with a long beak deeply bifid at the point. — *α.* lower sheaths elongated nearly equal to the stalks of the oblong cylindrical fertile spikelets. *E. B. t.* 685. — *β.* lower sheaths scarcely half as long as the stalks, fertile spikelets loose-flowered compound at the base.

Wet pastures and woods, frequent. — *β.* Inland Ferry near Dunoon, Argyleshire, Yorkshire? *Æ.* 5, 6. — *Stems* 1—2 feet high, more or less hairy in every part, sometimes shaggy, especially on the side of the sheath opposite to the bractea and near the apex: *Mr. Babington*, however, mentions a glabrous form with which we are unacquainted. *Mr. Turner* found a variety in Yorkshire, with a lower part of the fertile spikelets compound at the base; but we are not certain if it had the long stalks of our var. *β.*, sometimes attaining 7 inches, although the sheath be not more than 2 inches, being thus protruded 5 inches beyond it.

viii. *Barren spikelets 2 or more. Fruit glabrous or scabrous. Stigmas 3.*

\* *Bracteas with sheaths.*

62. *C. \*hordeiformis* Wahl. (*Barley C.*); barren spikelets

usually 2, upper one on a long stalk, fertile 3—4 erect oblong cylindrical or ovate, upper ones approximate on stalks about the length of their sheath, lowermost remote on a stalk sometimes twice as long as the sheath, bractæ long leafy, glumes broadly ovate with a hispid point or obtuse and pointless scariose at the margin, fruit (large) scarcely twice as long as the scale ovate or oblong acuminate nerved scabrous flat on the one side rounded on the other with two ciliate-serrate winged margins, beak bifid.

Small valley about 3 m. west of Panmure, Forfarshire, amongst some bushes near a spring, rare: *T. Drummond*. 2. 6. — Such was the habitat communicated by Mr. Drummond for the first edition of this Flora (in 1830): he had previously sent specimens to Mr. Robertson of Newcastle with the station "Den near Panmure about 9 m. S. E. from Forfar," as mentioned by Smith; while in 1827 we received a specimen from him from the "Sidlaw Hills," a widely different locality. We suspect that Mr. Drummond found the specimens among his collections, without any memoranda as to where they were gathered, and drew his inference from the other plants accidentally with them: there seems to be no doubt that they were obtained from his own garden, and were among the curiosities which the late Mr. Don had amassed there; so that the species ought to be expunged from our Flora. — Having seen authentic specimens of *C. secalina*, with which this has been united in the 4th ed. of *Br. Flora*, Dr. Boott is now of opinion that the 2 are really distinct. "*C. hordeiformis* is known by the large size of the perigynium, it being scabrous, plano-convex, with a large trigonous achenium; while *C. secalina* has a much smaller compressed glabrous fruit, and often more numerous and sometimes compound fertile spikes." Boott.

\*\* *Bractæas without sheaths.*

63. *C. ampullacea* Gooden. (*slender-beaked Bottle C.*); barren spikelets 2—3, fertile 2—3 distant shortly stalked cylindrical erect, sheaths none, bractæas foliaceous, glumes lanceolate about half as long as the fruit, fruit crowded somewhat membranaceous subglobose inflated striated suddenly contracted into a long narrow beak bifid at the point, stem bluntly triangular. *E. B. t.* 780.

Bogs and marshes, more abundant in Scotland than England. 2. 6. — Differs from *C. vesicaria* in the smooth and nearly rounded stem, in the channelled glaucous leaves, and in the fruit, which is brownish and not half so large, with a narrower beak and of a different shape.

64. *C. vesicaria* L. (*short-beaked Bladder C.*); barren spikelets 2—3, fertile 2—3 distant stalked cylindrical slightly drooping, sheaths none, bractæas foliaceous long, glumes lanceolate much shorter than the fruit, fruit somewhat membranaceous broadly ovate inflated striated gradually acuminate into a sub-

ulate beak bifid at the point, stem acutely triangular. *E. B.* t. 779.

Bogs and marshes, apparently most frequent in the north. *4.* 5, 6. — *Stems* 1½–3 ft. high, acutely angled. *Leaves* usually broad, sometimes narrow and involute. *Fruit* tawny, very large, shining, much inflated, but not suddenly constricted. We possess what appears to be an abnormal state of this species, collected by Dr. Greville in England, we believe in Derbyshire, where there are 6 spikelets all fertile, and all except the lowest one approximated.

65. *C. paludosa* Gooden. (*lesser common C.*); barren spikelets about 3 with obtuse glumes, anthers with a very minute point or pointless, fertile spikelets about 3 cylindrical obtuse erect, sheaths none, bractees very long foliaceous, glumes narrow acuminate, fruit subcoriaceous oblong-ovate striated with a short usually bifid beak. *E. B.* t. 807.

Banks of rivers and ditches, common. *4.* 5. — *Stem* 2–3 ft. high, with rough angles. *Leaves* very broad, keeled, rough. *Fruit* compressed; the beak sometimes entire at the point, according to Kunth.

66. *C. riparia* Curt. (*great common C.*); barren spikelets 3–5 approximate, with acuminate glumes, anthers tipped with a short awn, fertile spikelets 3–4 broadly cylindrical acute sessile or the lower ones stalked, sheaths none, bractees very long foliaceous, glumes oblong pointed, fruit oblong-ovate with a short deeply bifid beak. *E. B.* t. 579.

Sides of ditches and rivers, common. *4.* 5. — Larger than the last, with much broader leaves and spikelets. *Fruit* convex on the back, sometimes on both sides. Well distinguished from *C. paludosa* by the acuminate glumes of the sterile spikelets and the conspicuously mucronate anthers: we are indebted to Dr. Bromfield for pointing out this last character (*Phyt.* iii. p. 146.).

## ORD. CVII. GRAMINEÆ<sup>1</sup> Juss.

(See Tabs. VI.—IX.)

*Florets* usually perfect, sometimes imperfect, sometimes neuter (without either stamens or pistil); solitary, or 2 or more imbricated.

<sup>1</sup> Here we have a structure in the flower, and a habit in the whole plant, so different from those of other flowering-plants, that, in the former especially, peculiar names have been given to its different parts, which it may be desirable to explain. The floral coverings, as they are termed, are *glumaceous* or chaffy. The *outer* of these, which do not immediately contain stamens or pistil, and are composed of one (see Tab. 8. f. 36. a.) or two (Tab. 6. f. 3. a.) pieces, were called by Linnaeus the *calyx*; the pieces are the *glumes* or *valves*, and they resemble a calyx in the two-valved single-flowered genera, but often they include many flowers (Tab. 7. f. 23. a.), and with justice are considered *bractees* or leaves of an  *involucres*: in *Leersia* and *Nardus* they are wanting. The *inner*, generally of a thinner texture, was by Linnaeus and Smith named *corolla*; its pieces, one (Tab. 6. f. 3. b.) or two

cated on a common axis or rachis contained within an involucre (*calyx* L.) consisting of 2 (sometimes 1, rarely none) valves or *glumes*, the whole constituting a *locusta* or *spikelet*. *Perianth*? (*corolla* L.) glumaceous: that of the fertile florets usually of 2 dissimilar *glumellas* (*paleas* or *valvelets*); lower or outer simple, usually keeled or with a midrib; inner or upper with 2 lateral or dorsal nerves (hence probably of 2 united); sometimes one, sometimes both are wanting: of the barren florets of 1—2 *glumellas*: of the neuter ones often rudimentary or wanting. *Stamens* hypogynous, 1—6, rarely indefinite, usually 3. *Anthers* 2-celled, attached by their back about the middle, versatile. *Ovary* superior, 1-celled, with 1 *ovule*, usually with 2 (rarely 1, or 0) minute hypogynous scales (called *lodicules*, abortive *stamens*?). *Styles* 2, rarely 1 (simple or bifid) or 3 (perhaps only 1, and 2—3 cleft). *Stigmas* often plumose. *Pericarp* (a *caryopsis*) closely incorporated with the seed. *Embryo* lenticular, external, lying on one side at the base of the farinaceous *albumen*.—Stems or culms usually fistulose, generally simple and herbaceous, jointed, sometimes branched, rarely shrubby. Leaves one to each joint, with a sheath slit longitudinally on one side, having often a membranous appendage (*ligule*) at its summit. Flowers small, solitary, or in spikelets, which are paniced (Tab. 9. f. 42. d.) or spiked (Tab. 9. f. 42. c. e. f. g.).—A most natural Order, and one of the highest importance in the whole Vegetable Kingdom, comprehending the true *Grasses*.

(Tab. 6. f. 5. b.) in number, *glumes* or *valves*: these constitute the true *perianth* of Brown and are called *paleæ* by Beauv. and Kunth, *valvula* by Brown, Trinius, and Esenbeck, and *glumella* by Link; which last we adopt as having a special reference to this Order. Within this, and at the base of the germen, are generally 2 collateral, rarely 1, small scales (Tab. 9. f. 42. a.), *nectary* of Linn. and Sm., *lodicule* of Beauv. and most others, and *squamula hypogynæ* of Brown. The stem is mostly hollow, and jointed, and is called a *culm*. It bears at each joint a *leaf*, which is sheathing at the base and split up on one side; and at the top of the sheath, just where it expands into the blade, there is frequently a small projecting membrane, called a *ligule* (Tab. 9. f. 42. b.).—In this Order few botanists are yet agreed what ought to constitute a genus, and therefore we have not, with very few exceptions, either subdivided the genera, or changed the nomenclature adopted in previous editions; indeed, in a local Flora we do not think it desirable, if characters are thereby required of greater difficulty than can easily be surmounted by a student. We have likewise, for a similar reason, retained the same arrangement of the genera as formerly: Beauvois's is entirely artificial, intricate, and long since laid aside; Kunth's, in his *Enumeratio* (now followed by most), is neither artificial nor natural, but often difficult and sometimes inaccurate; that of Nees von Esenbeck (*Agrost. Brasil.*, and in *Lindl. Nat. Syst.* ed. 2) is more natural, but requires deep study: it is probable that in a few years great modifications will be made in all of them. Our own arrangement is certainly likewise liable to great objections: the number of flowers in a spikelet vary in the same genus and even in the same species, as in *Catabrosa*, some species of *Poa*, and *Melica*, &c.; and there is a variety of one species of *Bromus*, which we can only distinguish by very minute generic characters from *Poa* (*Glyceria*) on one hand, and *Lophium* on the other, although the genera themselves are naturally distinct.

A. *Stamens 2. Styles 2.*

1. *ANTHOXANTHUM*. Panicle spiked. Spikelet with one central fertile floret. Glumes 2. Glumellas 4, the two inner ones (the perfect floret) awnless, the two outer (each a neuter floret) awned and larger.
20. *HIEROCHLOE*. Panicle lax. Spikelets awnless, with one central perfect diandrous floret, and a barren triandrous one on each side.
32. *BROMUS*. Spikelets panicled, awned, with 3 or more perfect flowers.

B. *Stamens 3. Style 1. Glumes 0.*

2. *NARDUS*. Spike simple, unilateral. Florets sessile, solitary. Glumellas 2, outer one with a long subulate point.

C. *Stamens 3 (very rarely 1) in some or all of the florets. Styles or stigmas 2.*

- a. *Spikelets pedicellate, panicled. Panicle often very compact, so as to resemble a spike.*

\* *Spikelets with a single perfect floret; imperfect florets 0; neuter ones, when present, either rudimentary or consisting of empty glumellas, much smaller than the perfect one.*

† *Glumes 0.*

3. *LEERSIA*. Panicle spreading. Spikelets laterally compressed, keeled, awnless. Glumellas inclosing the caryopsis, lower one much the largest.

†† *Glumes 2.*

‡ *Panicle spiked. Glumes as long or longer than the floret.*

4. *ALOPECURUS*. Glumes usually connate at the base. Glumella 1, with a dorsal awn; neuter florets 0.
5. *PHALARIS*. Glumes strongly keeled. Glumellas 2, awnless, glabrous or equally pubescent, at length hardening and inclosing the caryopsis. Neuter florets 1—2, rudimentary, coriaceous, and scale-like.
6. *AMMOPHILA*. Glumes keeled, awnless, diverging. Glumellas 2, subcoriaceous below, and with a tuft of short silky hairs at the base. Neuter floret 1, coriaceous, rudimentary and scale-like.
7. *PHLEUM*. Glumes pointed or with a short terminal awn, parallel. Glumellas 2, membranaceous, awnless. Caryopsis free.
8. *LAGURUS*. Glumes tapering into a long subulate point, fringed to the end. Glumellas 2, membranaceous; outer one with two terminal bristles, and a dorsal jointed awn.
10. *GASTRIDIVM*. Glumes membranaceous, acute, entire, awnless, ventricose at the base. Glumellas 2, membranaceous, truncate or toothed at the end, with a long straight awn below the point.
12. *POLYPOGON*. Glumes notched at the end, with a long straight awn. Glumellas unequal; outer one obtuse, awned almost at the very extremity.

‡‡ *Panicle lax, spreading or contracted (not spiked).*

§ *Glumes as long or longer than the floret.*

|| *Spikelet or floret broader than thick (dorsally, not laterally, compressed).*

9. *MILIUM*. Panicle spreading. Glumes herbaceous, flattish on the back. Glumellas glabrous, awnless, at length hardened and inclosing the caryopsis. Neuter floret 0.

||| *Spikelet or floret either rounded on the back or laterally compressed.)*

11. *STIPA*. Panicle erect. Glumellas cartilaginous, outer one involute, ending in a very long twisted awn, which is jointed at the base and finally separates at the joint.
5. *PHALARIS*. Panicle somewhat contracted. Glumes keeled. Glumellas uniformly hairy, awnless, at length hardened on the caryopsis.
13. *CALAMAGROSTIS*. Panicle loose. Floret surrounded with long silky hairs. Glumellas membranaceous.
14. *AGROSTIS*. Panicle loose. Floret glabrous, or with a small tuft of hairs at the base. Glumellas membranaceous. Caryopsis free.

§§ *Glumes shorter than the floret, unequal.*

17. *MOLINIA*. Panicle somewhat contracted. Glumes acute, lower one 1-nerved. Glumellas at length cartilaginous, and covering the caryopsis. Neuter floret, when present, subulate.
18. *MELICA*. Panicle lax. Glumes rounded on the back, several-nerved. Glumellas glabrous, awnless, at length cartilaginous and inclosing the loose caryopsis. Neuter floret club-shaped.
15. *CATABROSA*. Panicle spreading. Glumes obtuse, lower one 1-nerved. Glumellas membranaceous.

\*\* *Spikelets 2—3-flowered; perfect florets 2, or solitary with 1—2 barren (triandrous florets) or a neuter floret as large as the perfect one.*

† *Spikelets compressed laterally or somewhat rounded.*

‡ *Panicle lax, spreading or contracted.*

§ *Fertile florets 2. Barren 3-androus ones none.*

15. *CATABROSA*. Spikelets scarcely compressed, awnless. Glumes obtuse, shorter than the florets, unequal, 1-nerved. Glumellas 2, nearly equal, glabrous on the keel and at the base, truncated and erose at the summit.
26. *POA*. Spikelets compressed, awnless. Glumes shorter than the florets, 3-nerved. Glumellas 2, herbaceous, entire; outer one keeled and hairy on the keel below the middle, scarious and bluntish at the end (not acuminate).
31. *FESTUCA*. Spikelets compressed, awnless on the back. Glumes shorter than the florets, narrow and acute, lower 1-, upper absolutely 3-nerved. Glumellas 2, herbaceous; outer one rounded on the back below, 3-ribbed, acuminate, not silky on the ribs.
16. *AIRA*. Spikelets compressed. Glumes 2, unequal, lower 1-, upper 1—3-nerved, about as long as the florets. Glumellas hairy at the base; outer one awned at the back with or without faint lateral

nerves, toothed or entire or bifid, but not setigerous, at the end. Caryopsis glabrous.

33. *AVENA*. Spikelets compressed. Glumes 2, membranaceous, upper one 3—7-nerved. Glumellas hairy at the base, at length cartilaginous and firmly enclosing the caryopsis; outer one with a long twisted geniculate awn, with 2 points or bristles at the summit.
18. *MELICA*. Spikelets rounded on the back, awnless. Glumes 2, membranaceous, as long as the florets, nearly equal, 5-nerved. Outer glumella rounded on the back, 7-nerved, entire, glabrous, at length cartilaginous and inclosing the loose caryopsis. Neuter floret club-shaped.
17. *MOLINIA*. Spikelets awnless. Glumes 2, membranaceous, acute, much shorter than the florets, unequal, 1-nerved. Outer glumella rounded on the back 3—5-nerved, entire, glabrous, at length cartilaginous and enclosing the loose caryopsis. Neuter floret subulate.
27. *TRIODIA*. Spikelets compressed, rounded on the back, awnless. Glumes 2, as long as the florets, 3-nerved. Glumellas subcoriaceous, hairy at the base; outer one 3-toothed at the end.

§§ *Spikelets of one perfect and 1—2 triandrous florets.*

19. *HOLCUS*. Florets 2, triandrous; lower perfect, upper barren, awned.
20. *ARRHENATHERUM*. Florets 2, triandrous; upper perfect, with a short bristle at the point; lower barren, with a long twisted geniculate awn above the base of the outer glumella.
21. *HIEROCHLOE*. Florets 3, awnless; central one perfect, diandrous; barren ones lateral, triandrous.

‡‡ *Panicle spiked.*

22. *KOELERIA*. Panicle rounded. Spikelets distichous, without a bractea at the base. Glumes unequal; upper one with several nerves. Glumellas membranaceous; outer one keeled, entire, pointed.
23. *SESLERIA*. Panicle rounded. Spikelets laterally compressed, without a bractea at the base. Glumes about as long or longer than the florets, nearly equal, 1-nerved. Glumellas membranaceous; outer one keeled, jagged, with a short terminal bristle.
30. *CYNOSURUS*. Panicle unilateral. Spikelets distichous, with a pectinate bractea at its base. Glumes much shorter than the florets, equal, 1-nerved. Glumellas membranaceous; outer one linear-lanceolate, mucronate or awned at the end.

†† *Spikelets broader than thick, dorsally (not laterally) compressed. Perfect floret 1, its glumellas hardening on the caryopsis; neuter as large as the perfect one, of one glumella.*

9. *MILIUM*. Panicle lax, diffuse. Glume 1, the lower one wanting. Neuter glumella herbaceous, and resembling the glume.

††† *Spikelets flat in front, gibbous or rounded on the back (not laterally compressed). Perfect floret 1, its glumellas hardening on the caryopsis; barren or neuter as large as the perfect one, of 1—2 glumellas.*

24. *PANICUM*. Panicle in a racemose somewhat unilateral compound spike. Spikelets without bristles at the base, awned, arranged on one side of a flattened partial rachis. Glumes 2; lower one the smallest.



41. **DIGITARIA.** Spikelets without bristles at the base, awnless, arranged on one side of a spreading partial rachis, and forming a digitate or shortly racemose compound spike. Glumes 2; lower one the smallest and sometimes obsolete.
25. **SETARIA.** Panicle in a compound cylindrical dense spike. Spikelets 1—3 together, surrounded by an involucre of bristles and separating from it.

\*\*\* *Spikelets with 3 or more perfect florets, laterally compressed. Glumes 2.*

† *Outer glumellas with a dorsal awn from or below the middle.*

16. **AIRA.** Panicle lax. Spikelets laterally compressed, with 3 perfect florets. Glumes about as long as the florets, membranous. Glumellas 2; outer ones hairy at the base, 1-nerved, jagged at the end, with a slender dorsal awn from below the middle.
83. **AVENA.** Panicle lax. Spikelets laterally compressed, with 3 or more perfect florets. Glumes membranaceous, about as long as the spikelet. Glumellas lanceolate, hairy at the base, herbaceous but at length cartilaginous and firmly inclosing the caryopsis; outer one with a long geniculate dorsal awn, with 2 points or bristles at the summit.

†† *Outer glumellas with or without a terminal or subterminal awn or bristle, but no dorsal awn.*

‡ *Florets not mixed with long silky hairs.*

§ *Glumes about as long as the rest of the spikelet.*

27. **TRIODIA.** Panicle racemed. Spikelets compressed, with 3—4 fertile flowers. Glumes as long as the florets, 3-nerved. Glumellas 2; outer one somewhat coriaceous, rounded on the back, hairy at the base, 3-toothed at the end, middle tooth straight.
23. **SESLERIA.** Panicle spiked, rounded. Spikelets laterally compressed, with 3 or more perfect florets. Glumes nearly equal, 1-nerved, about as long as the florets. Glumellas naked at the base, membranaceous; outer one keeled, jagged, with a short terminal bristle.

§§ *Glumes conspicuously shorter than the rest of the spikelet.*

|| *Panicle spiked, or somewhat contracted and rigid.*

22. **KOELERIA.** Panicle spiked, rounded. Spikelets without a pectinate bractea, distichous, with 3—4 perfect florets. Glumes unequal, membranaceous, keeled, shorter than the florets. Glumellas membranous, naked at the base; lower one 3-nerved, keeled, pointed, entire.
30. **CYNOSURUS.** Panicle spiked, unilateral. Spikelets with a pectinate bractea at the base, distichous, with 3—5 perfect florets. Glumes 2, equal, membranaceous, much shorter than the florets, 1-nerved, keeled, shortly awned. Glumellas membranaceous, linear-lanceolate; outer one mucronate or awned at the end.
26. **POA.** Panicle unilateral. Spikelets without a pectinate bractea, with 3—5 perfect florets. Glumes rather unequal, 1-nerved, keeled, awnless; outer glumella scarious on the margin, prominently 5—7-nerved.

||| *Panicle or raceme more or less lax, spreading or contracted.*

15. **CATABROSA.** Panicle spreading. Spikelets awnless, scarcely com-

- pressed, ovate, with 3 fertile florets. Glumes 1-nerved, much shorter than the florets. Glumellas glabrous on the keel and at the base, membranaceous, very obtuse. Caryopsis free.
17. *MOLINIA*. Panicle contracted, but rather lax. Spikelets lanceolate, awnless, with 3 perfect semicylindrical florets and a subulate rudimentary neuter one. Glumes 1-nerved, much shorter than the florets. Glumellas 3—7-nerved, glabrous, entire at the end, at length cartilaginous and enclosing the caryopsis.
26. *POA*. Panicle lax or contracted. Spikelets ovate or linear, compressed or cylindrical, awnless. Glumes 2, shorter than the florets, more or less membranaceous. Glumellas 2, somewhat ovate, bluntish, rarely tipped with a minute point. Caryopsis free.
28. *BRIZA*. Panicle lax. Spikelets awnless, much compressed laterally, cordate-deltoid, with 8 closely imbricated perfect florets. Glumes nearly equal, broad. Outer glumella navicular, obtuse, rounded on the back, membranaceous with a scarious margin; inner one small, flat.
29. *DACTYLIS*. Panicle with the secondary branches short and very dense, subsecund. Spikelets with 3—4 perfect florets, compressed. Glumes shorter than the florets, unequal; outer one keeled. Outer glumella keeled and ciliated on the back, 5-nerved, lanceolate, with a short bristle close to the summit, inclosing the caryopsis.
31. *FESTUCA*. Panicle lax or coarctate. Spikelets many-flowered, more or less laterally compressed, without a bractea at the base. Glumes unequal, membranaceous, much shorter than the spikelet, usually keeled. Glumellas lanceolate; outer one rounded on the back, very acute or awned at the point, the lateral nerves slightly converging and disappearing below the summit. Styles terminal.
32. *BROMUS*. Panicle lax, spreading, or coarctate. Spikelets many-flowered, more or less laterally compressed, without a bractea at the base. Glumes unequal, much shorter than the florets, usually keeled. Glumellas 2, herbaceous; outer one rounded on the back, 2 of the lateral nerves usually uniting and forming an awn below the bifid summit. Styles from below the summit of the caryopsis.

‡‡ *Florets mixed with long silky hairs.*

34. *PHRAGMITES*. Panicle lax. Spikelets distichous, with 3—4 distant perfect flowers and a barren 3-androus one at the base, all enveloped with long silky hairs attached to the axis. Glumes membranaceous, rather shorter than the florets, unequal. Glumellas membranaceous; lower one tapering with a long narrow subulate point.

b. *Spikelets spiked, either sessile or shortly stalked, and arranged in a simple or compound spike or spike-like raceme.*

\* *Spikelets inserted on different sides of the rachis, sometimes slightly unilateral. Spikes usually simple.*

35. *ELYMUS*. Spikelets in pairs, each containing 2—4 perfect florets. Glumes 2, collateral, awnless. Glumellas 2, covering and usually incorporated with the caryopsis.
36. *HORDEUM*. Spikelets ternate, 1—2 usually neuter or barren; fertile ones with one perfect floret and a rudimentary neuter one. Glumes 2, collateral, awned. Glumellas 2.
37. *TRITICUM*. Spike simple. Spikelets solitary, sessile, transverse to the rachis, many-flowered. Glumes 2, opposite, nearly equal; outer one with several nerves.

26. *POA*. Spike simple or compound, somewhat unilateral. Spikelets approximate, without a pectinated bractea at the base, several-flowered. Glumes 2, opposite; outer one 1-nerved.
30. *CYNOSURUS*. Spikelets approximate, with a pectinate bractea at the base, shortly stalked, with 2—5 perfect flowers. Glumes equal, membranaceous, 1-nerved.
38. *BRACHYPODIUM*. Spike simple. Spikelets solitary, sessile, transverse to the rachis, remote, at first cylindrical, many-flowered. Glumes 2, opposite, unequal; outer one with several nerves, much shorter than the contiguous lowermost floret. Inner glumella strongly ciliated on the nerves.
31. *FESTUCA*. Spikelets distant, solitary or in pairs, sessile or nearly so, placed edgewise to the rachis, with 6—10 fertile florets, awnless. Glumes 2, opposite, unequal, much shorter than the lowermost contiguous floret.
39. *LOLIUM*. Spike compressed, simple or sometimes slightly compound. Spikelets solitary, approximate, sessile, placed edgewise to the rachis, with 3 or more perfect florets. Glumes solitary, or 2 with the one next the rachis small; outer with several nerves, as long or longer than the lowest contiguous floret.
40. *LEPTURUS*. Spike simple, cylindrical. Spikelets solitary in each joint imbedded in alternate cavities on opposite sides of the rachis and placed edgewise to it. Glumes 2, coriaceous, collateral on the outside of the cavity and covering it.
41. *KNAPPIA*. Spikelets shortly stalked, solitary, arranged on two sides of the simple rachis and forming a simple unilateral spike-like raceme, 1-flowered, awnless. Glumes 2, opposite, truncated, nearly equal, rather longer than the floret, membranaceous, 1-nerved. Outer glumella hairy, membranaceous, jagged; inner sometimes wanting.
- \*\* *Spikelets (with 1 perfect flower) arranged only on one side of the partial rachis, and forming a racemose or digitate compound spike or raceme.*
42. *SPARTINA*. Partial spikes erect. Spikelets sessile, laterally compressed, with scarcely any rudimentary neuter floret. Glumes very unequal. Glumellas compressed, lanceolate, acuminate. Styles united near to the middle. Stigmas elongated.
43. *CYNODON*. Partial spikes spreading. Spikelets almost sessile, laterally compressed, with a rudimentary neuter floret. Glumes nearly equal. Glumellas compressed; outer one cymbiform. Styles distinct. Stigmas oval.
44. *DIGITARIA*. Partial spikes spreading. Spikelets in pairs on short unequal pedicels, flat in front, rounded on the back, with a neuter floret in front as large as the perfect one. Styles distinct.

#### A. Stamens 2. Styles 2. (Gen. 1.)

##### 1. *ANTHOXANTHUM* Linn. Vernal-grass. (Tab. VI. f. 1.)

*Panicle* spiked. *Spikelets* with 1 perfect central floret, and two outer larger neuter ones. *Glumes* 2, very unequal; upper the longer. *Glumellas* of the perfect floret 2, awnless; of the neuter florets single, awned.—Name: *ανθος*, a flower, and *ξανθος*, yellow; from the yellowish hue of the spikes, especially in age.

1. *A. odoratum* L. (*sweet-scented V.*); panicle spiked oblong

often interrupted at the base, awn of the upper neuter glumella longer than the upper glume. *E. B.* t. 647: *Parn. Gr.* t. 8.<sup>1</sup>

Meadows, woods, and pastures, abundant, often very alpine. 4. 5, 6. — A foot high, its agreeable smell in the act of drying, like that of *Woodruff* (*Asperula odorata*), gives the well-known scent to new-made hay. *Leaves* short. *Panicle* compact, spiked, yellow in age. *Glumes* very unequal. Mr. Brown first pointed out the true structure of the spikelets of this genus: previously the two neuter florets were considered by some an inner pair of glumes, by others an outer corolla or perianth. *A. gracile* differs by the awns of both the neuter florets being shorter than the upper glume. *Stamens* only 2, whereby this genus departs perhaps from all our other grasses, except *Bromus diandrus* and *Hierochloë*, in which last the two lateral barren florets are triandrous. *Stigmas* very long, linear.

B. *Stamens* 3. *Style and Stigma* 1. (Gen. 2.)

2. *NÁRDUS* Linn. Mat-grass. (Tab. VI. f. 2.)

*Spike* simple, unilateral. *Spikelets* 1-flowered. *Glumes* 0. *Glumellas* 2; the outer one keeled with a long subulate point. *Stigma* elongated, filiform, papillose. — Name, from *νάρδος*, formerly given to an odoriferous substance, but not applicable in this case.

\* 1. *N. stricta* L. (*Mat-grass*). *E. B.* t. 290: *Parn. Gr.* t. 2.

Moors and heaths, most abundant. 4. 6. — A grass of simple structure, growing in short tufts, so coarse and rigid that cattle will not eat it. *Culms* and *leaves* setaceous. *Spike* long, erect, slender, grooved, and toothed at short distances for the insertion of the florets. *Glumellas* lanceolate: outer one coriaceous, purplish-green, tapering gradually into an awn; inner smaller, awnless, membranous. The only species of the genus.

C. *Stamens* 3 (or very rarely 1) in some or all of the florets.  
*Styles or stigmas* 2.

a. *Spikelets* very rarely sessile and spiked, usually pedicellate and panicled. (Tab. IX. f. 42. d.) *Panicle* often very compact so as to appear spiked. (Tab. IX. f. 42. c.) (Gen. 3—34.)

\* *Spikelets* with a single perfect floret, and no barren ones; neuter florets, when present, either rudimentary or consisting of empty glumellas much smaller than the perfect ones. (Tab. VI. f. 3—13.) (Gen. 3—14.)

• 3. *LEÉRSIA* Soland, Cut-grass.

*Panicle* lax, often contracted. *Spikelets* compressed laterally.

<sup>1</sup> We refer here to Dr. Parnell's *Grasses of Britain*, a work of great value to students who wish to obtain a knowledge of those plants. The plates, especially of the 2nd part, are very accurate; except perhaps as regards the hypogynous scales and the styles and stigmas.

*Glumes* wanting. *Glumellas* 2, chartaceous, navicular, much compressed, awnless, inclosing the loose caryopsis; lower one much the broader. *Stamens* 3 or 6, rarely 1.—Named in honour of *John Daniel Leers*, a German botanist, who published in 1757 the *Flora Herbornensis*.

1. *L. oryzoides* Sw. (*European C.*); panicle effuse the branches not appressed, spikelet half-elliptical strongly ciliated triandrous, leaves very rough, ligule short. *E. B. S. t.* 2908.

Ditches, drains of water, meadows, brooks, and pools, rare. Near Henfield, and Arundel, Sussex; Boldre river, near Brockenhurst Bridge, Hants. *¶.* 8—10.—For this late addition to the British Flora we are indebted to Mr. Borrer: the same species is found on the Continent, but is most abundant in North America.

#### 4. *ALOPECURUS* Linn. Fox-tail-grass. (Tab. VI. f. 3.)

*Panicle* spiked. *Spikelets* compressed laterally. *Glumes* 2, nearly equal, usually connate at the base, membranaceous, about as long as the floret. *Glumella* solitary, with a dorsal awn above the base. *Neuter florets* 0.—Named from *αλωπηξ*, a fox, and *ουρα*, a tail.

1. *A. pratensis* L. (*Meadow F.*); culm erect smooth, panicle spiked cylindrical obtuse, glumes lanceolate acute hairy connate at the base, awn twice the length of the glumella. *E. B. t.* 759: *Parn. Gr. t.* 4.

Meadows and pastures, common. *¶.* 5, 6.—An excellent grass for cattle. *Culm*  $1\frac{1}{2}$  to 2 ft. high. *Panicle* of a yellow-green colour, with silvery hairs. *Glumes* and *glumella* much ciliated, in this, as in all the species, remarkably compressed.

2. *A. alpinus* Sm. (*Alpine F.*); culm ascending smooth, panicle spiked ovate obtuse, glumes ovate abruptly acute hairy united at the base, awns scarcely longer than the glumella, upper sheath inflated thrice as long as its lanceolate leaf. *E. B. t.* 1126: *Parn. Gr. t.* 4.

Loch na Gar, Aberdeenshire. Sides of streams among the Clova and Canlochen mountains, frequent, particularly near Loch Wharral, banks of the Glashieburn, Glen Prosen, and the marshy ground between Clova and Loch Lee. *¶.* 7, 8.—This plant, which, even at first sight, is distinguishable by its ovate *panicle* and short broad upper *leaf* with its inflated *sheath* (originally observed by Mr. Brown in the Appendix to Parry's 1st Voyage), seems quite unknown to Continental botanists, and is very rare in this country, though plentiful in North America and Spitzbergen.

3. *A. agr stis* L. (*slender F.*); culm erect scabrous above, panicle cylindrical acuminate, glumes acute almost glabrous united as far as the middle, awn more than twice the length of the glumella. *E. B. t.* 848: *Parn. Gr. t.* 3.

Fields and way-sides in England, scarcely indigenous in Scotland. ☉. 6, 7. — Readily known by its attenuated *panicles* or *spikes*, frequently of a purplish colour, and by the lanceolate acute *glumes*, which are glabrous or a little rough at the keel. *Glumella* quite smooth.

4. *A. bulbosus* L. (*tuberous* F.); culm erect smooth, panicle cylindrical acuminate, glumes acute slightly hairy free, awn twice the length of the glumella. *E. B. t.* 1249: *Parn. Gr.* t. 76.

Wet salt-marshes in England, rare; near Yarmouth and Weymouth. In Cardiff marshes, Wales. 4. 7. — The *inflorescence*, though very dense, is not a true *spike*. The *pedicels* mostly bear single flowers, but often another very small abortive one. *Glumes* entirely distinct to the base.

5. *A. geniculatus* L. (*floating* F.); culm ascending bent at the joints smooth, panicle cylindrical obtuse, glumes united at the base obtuse slightly hairy and fringed, awn twice as long as the glumella and inserted near its base. *E. B. t.* 1250: *Parn. Gr.* t. 5.

In pools, and wet and marshy places, sometimes on dry ground. 4. 7, 8.

6. *A. fulvus* Sm. (*Orange-spiked* F.); culms ascending bent at the joints smooth, panicle cylindrical obtuse, glumes united at the base obtuse slightly hairy and fringed, awn the length of the glumella and inserted near its middle. *E. B. t.* 1467: *Parn. Gr.* t. 5. *A. geniculatus* Host *Gram. Austr.* v. ii. t. 32.

Ponds and ditches; near Birmingham; Norwich; Essex; Wrexham; and in Angus and Fifeshire. 4. 7. — Closely allied to *A. geniculatus*, but the *awn* is inserted higher up, and is much shorter, and the *spike* is more slender and paler. *Anthems* orange-coloured.

#### 5. PHALARIS Linn. Canary-grass. (Tab. VI. f. 4.)

*Panicle* spiked or spreading, *Spikelets* laterally compressed *Glumes* 2, nearly equal, erect, navicular, membranaceous longer than the floret. *Glumellas* 2, awnless, glabrous or equally hairy, at length hardened and investing the *caryopsis*. *Neuter florets* 1—2, rudimentary, sessile, and scalelike. — Named from *φαλος*, *shining*; *canary-seed* being very glossy.

\* *Glumes* winged on the keel. *Panicle* spiked.

1. \**P. Canariensis* L. (*cultivated* C.); panicle spiked ovate, glumes boat-shaped entire at the point, neuter florets 2 scale-like half the length of the perfect ones. *E. B. t.* 1310; *Parn. Gr.* t. 9.

Naturalized in many parts of England and Scotland. ☉. 7. — *Culm* 1—2 ft. high, glaucous. *Leaves* broad. *Spikes* handsome, composed of large, pale, yellow-green *glumes*, marked with deeper

lines and singularly keeled at the back. *Canary-seed*, as we see it, is not only the seed of this plant, but the seed invested closely (as all *grass-seeds* are) with the pericarp, and that again with the hardened perianth or glumellas, thus occasioning its glossy appearance and pointed form.

\*\* *Glumes not winged at the keel, panicle with spreading branches, Digraphis.*

2. *P. arundinácea* L. (*Reed C.*); panicle erect its branches patent, florets crested secund, neuter florets consisting of 1—2 small hairy valves. *E. B.* t. 402, and t. 2160. f. 2 (under *Calamag. stricta*): *Parn. Gr.* t. 9. — *β. variegata*, leaves variegated with white lines. *Parn. Gr.* t. 82. *Arundo colorata Sm. Fl. Br.*

Sides of lakes and rivers, common. *ϑ.* 7, 8. — The *var. β.* is frequent in gardens, and called *ribbon-grass*. Very different from the last in general habit, but not in essential character. *Panicle* large, 6—8 inches long, often brownish or purplish-green. Useful for securing river-banks; its roots are creeping, and here and there tufted.

#### 6. AMMÓPHILA<sup>1</sup> Host. Sea-reed. (Tab. VI. f. 5.)

*Panicle* spiked. *Spikelets* laterally compressed. *Glumes* nearly equal, keeled, membranaceous, diverging, longer than the floret. *Glumellas* 2, subcoriaceous below, each with a tuft of short silky hairs at the base; outer one mucronulate or with a very short awn below the point. *Neuter floret* 1, rudimentary and very minute, coriaceous, sessile, often obsolete. — Named from *αμμος*, sand, and *φίλος*, a lover.

1. *A. arundinácea* Host (*common S., Marum, or Matweed*); panicle cylindrical acuminate, glumes acute, hairs one-third the length of the floret. *Arundo arenaria E. B.* t. 520: *Parn. Gr.* t. 8. *Psamma Beauv.*

Sandy sea-shores, frequent. *ϑ.* 7. — *Root* much creeping. *Leaves* long, narrow, rigid, involute, glaucous. *Culm* 2—3 ft. high. *Glumellas* far more rigid than the *glumes*; the larger ones with a small sinus below the point. — Extensively grown in Norfolk and Holland for preserving the banks of sand which protect these countries from the inroads of the sea; and in Sussex for making beautiful table-mats and basket-work.

#### 7. PHLEŪM Linn. Cat's-tail-grass. (Tab. VI. f. 6.)

*Panicle* spiked. *Spikelets* laterally compressed. *Glumes*

<sup>1</sup> This name is nearly ten years older than *Psamma*, given by Beauvois in 1812, and can only be objected to, because Kirby had shortly before applied it to a genus of insects, a circumstance certainly to be regretted; still, as many of our established genera, both in the animal and vegetable kingdoms, would for a similar reason require alteration, the correction would lead to endless confusion.

nearly equal, parallel, acuminate or mucronate-aristate, longer than the floret. *Glumellas* 2, membranous, glabrous, awnless. *Caryopsis* free. — Named from φλεος, or φλεως, formerly applied, it is supposed, to the *Reed-mace* (*Typha*), to which our grass bears some distant resemblance.

1. *P. pratense* L. (*common C.* or *Timothy-grass*); panicle cylindrical, glumes truncated mucronate-aristate ciliated at the back at least twice as long as the awn, neuter floret wanting. *E. B. t.* 1076: *Parn. Gr. tt.* 6, 77, 78.

Meadows and pastures, very common. 4. 6. — *Root* sometimes tuberous, and then the plant is the *P. nodosum* Willd. *Glumes*, as in all the species, extremely compressed, keeled with a dorsal green nerve running out into a spreading awn, scarcely half so long as the glume.

2. *P. alpinum* L. (*alpine C.*); panicle oblong or ovate-oblong, glumes truncated mucronate-aristate ciliated at the back scarcely longer than the awn, neuter floret wanting. — α. awn ciliated, upper sheath scarcely inflated and about twice the length of the leaf, uppermost ligule oblong acute. — β. awn scabrous, upper sheath inflated 3—4 times the length of the leaf, uppermost ligule very short obtuse. *E. B. t.* 519: *Parn. Gr. t.* 6. *P. commutatum* Gaud.

β. Banks of mountain-streams, rare. Braedalbane mountains; Feula burn, Canlochen Glen, Glashieburn, White Water above Glen Dole, Glen Fiadh, and rocks near Loch Brandy, Clova; Garway moor, Invernesshire. 4. 7. — *Spike* purplish, variable in length, sometimes only half an inch, sometimes 1½ inch long. The awns in our Scotch plant "are generally scabrous; but in some instances the scabrous processes towards the base are so elongated as to become cilia." *Gardn.*

3. *P. asperum* Jacq. (*rough C.*); panicle cylindrical, glumes wedge-shaped tumid upwards mucronate rough, neuter floret subulate, stem often branched. *Parn. Gr. t.* 79. *P. paniculatum* Huds.: *E. B. t.* 1077.

Rare in dry open fields, in the western and midland parts of England. ☉. 7. — *Culms* very leafy, the long *spikes* are partly concealed among them.

4. *P. Boehmeri* Schrad. (*purple-stalked C.*); panicle cylindrical, glumes linear-lanceolate suddenly acuminate-aristate hispidly ciliate on the keel above the middle, neuter floret subulate. *Parn. Gr. t.* 80. *Phalaris phleoides* L.: *E. B. t.* 459.

Dry sandy and chalky fields, rare; principally in Norfolk and Cambridgeshire. 4. 7. — *Culms* simple, erect, sparingly leafy, slender, shining purple.

5. *P. \* Michélii* All. (*Michelian C.*); panicle nearly cylindri-



cal, glumes lanceolate acuminate strongly ciliated at the back the whole length. *E. B.* t. 2265: *Parn. Gr.* t. 7.

Rocky parts of the high mountains of Clova, Scotland: *G. Don.* 4. 7, 8. — Distinguishable at once from the preceding species by its gradually tapering *glumes*. No one has succeeded in verifying Don's discovery, and it is generally believed to be founded on mistake, the specimens given by him being cultivated ones.

6. *P. arenarium* L. (*Sea C.*); panicle obovate-cylindrical, glumes lanceolate acute ciliated at the back above the middle, *Parn. Gr.* t. 7. *Phalaris E. B.* t. 222.

On loose sand, especially near the sea. ☉. 5, 6. — *Culms* 5—6 inches high, many from the same root. *Glumellas* half as long as the *glumes*, membranaceous, truncated.

#### 8. *LAGURUS* Linn. Hare's-tail-grass. (Tab. VI. f. 7.)

*Panicle* spiked. *Spikelets* laterally compressed. *Glumes* lengthened into a long subulate point, fringed to the end, longer than the floret. *Glumellas* 2, membranaceous; outer one bifid, ending in 2 long bristles, with a dorsal twisted jointed awn. — Named from *λαγως*, a hare, and *ουρα*, a tail.

1. *L. ovatus* L. (*ovate H.*); *E. B.* t. 1334: *Parn. Gr.* t. 88.

Very rare. Sandy grounds in the north and west of Guernsey. ☉. 6. — The only species of the genus, remarkable for its soft and pale heads of flowers, from among which the long awns are protruded.

#### 9. *MILIUM* Linn. Millet-grass. (Tab. VI. f. 8.)

*Panicle* spreading. *Spikelets* somewhat dorsally compressed, awnless. *Glumes* 2, nearly equal, flattish, herbaceous, rather acute, scarcely longer than the floret. *Glumellas* 2, nearly equal, glabrous, at length hardened and enclosing the *caryopsis*. *Neuter florets* 0. — Named either from *mille*, a thousand, on account of its fertility; or, according to Théis, from the Celtic *mil*, a stone, from the hardness of its fruit.

1. *M. effusum* L. (*spreading M.*); panicle glabrous its branches subverticillate, leaves lanceolate, ligule obtuse. *E. B.* t. 1106: *Parn. Gr.* t. 17.

Moist shady woods. 4. 6. — *Culms* 3—4 feet high. — We have above, for the sake of simplicity, given this genus a character very different from what it ought really to have, and which would remove it to near *Panicum*: it has only one *glume*, the lower being entirely absent, while what we have called the second glume is a *neuter floret* composed of one *glumella* as large as and precisely similar to the *glume*.

#### 10. *GASTRIDIMUM* Beauv. Nit-grass. (Tab. VI. f. 9.)

*Panicle* contracted, spiked. *Spikelets* scarcely compressed.

*Glumes* 2, acute, awnless, ventricose and rounded at the base, keeled upwards, membranaceous, much longer than the floret. *Glumellas* 2, membranaceous; outer one truncate or toothed at the end with (or without) a long straight awn below the point. *Neuter florets* 0. — Named from *γαστριδιον*, a *ventricle*, or little swelling, as is seen at the base of the spikelet.

1. *G. lendigerum* Beauv. (awned *N.*); glumes lanceolate acuminate shorter than the awn of the glumella. *Parn. Gr.* t. 86. *Milium E. B.* t. 1107.

Places where water has stagnated near the sea, rare. Gillingham and Cley, Norfolk; Little Broddon and Great Leighs, Essex; Sheppy Isle and Erith, Kent; Sussex; Ryde, Isle of Wight; Weymouth, Dorsetsh.; Devonsh.; Somerset; Gloucester. N. Wales. 4. 8. — *Culms* 4—6 or 8 inches high, with numerous glossy *florets*, singularly swollen at the base.

# 11. *Στίφα* Linn. Feather-grass. (Tab. VI. f. 11.)

*Panicle* erect, contracted (but not spiked). *Glumes* 2, longer than the floret, membranaceous. *Floret* stipitate. *Glumellas* cartilaginous; outer one involute, terminated with a very long twisted awn, jointed at the base, and finally separating at the joint. *Neuter florets* 0. — Named from *στύνη*, *tow*, *flax*, from the flaxen or silky appearance of the common species of the gardens.

1. *S. \* pennata* L. (common *F.*); leaves rigid setaceous grooved, awns exceedingly long feathery to the point. *E. B.* t. 1356: *Parn. Gr.* t. 87.

Said to have been found in Dillenius's time in Westmoreland. 4. 6. — A great ornament to our gardens in the summer, and to our rooms in the winter, for if gathered before the seed is ripe, the long feathery awns remain, and a tuft of this grass is almost as beautiful as the famed tail of the Bird of Paradise.

# 12. *Πολύγωνος* Desf. Beard-grass. (Tab. VI. f. 10.)

*Panicle* compact, somewhat spiked. *Spikelets* laterally compressed. *Glumes* 2, equal, longer than the floret, each notched and with a long straight awn at the extremity. *Glumellas* unequal; the outer obtuse, usually awned almost at the very extremity. *Neuter florets* 0. — Named from *πολυ*, *many*, and *πώγων*, a *beard*; from the bearded appearance of the panicle.

1. *P. Monspeliciensis* Desf. (annual *B.*); awns 2—3 times as long as the rather obtuse rough glumes, root annual. *Parn. Gr.* t. 11. *Agrostis panicea* *E. B.* t. 1704.

Rare, in moist pastures near the sea. Hampshire; Purfleet, Essex; Northfleet Hope, Thames; Cley, Norfolk; Gloucester; Durham (on ballast-hills). Guernsey. Inverkeithing, Fifeshire. ☉. 7, 8. —

A beautiful grass; rare, but undoubtedly wild in our country; most abundant in the warmer parts of Europe.

2. *P. littoralis* Sm. (*perennial B.*); awns equal in length to the almost glabrous acute glumes, root perennial. *Parn. Gr.* t. 81. *Agrostis E. B.* t. 1251.

Muddy salt-marshes, very rare. Near Cley, Norfolk; coast of Essex; near the powder magazine, Woolwich. 4. 7.— Very different from the last species; yet rightly referred, by Sir J. E. Smith, to *Polypogon*. The *glumes* are more acuminate than in *P. Monsp.*, and taper more gradually into the much shorter awn; outer *glumella* truncate; both toothed at the points. — Long supposed peculiar to England, but found in Germany, France, and Spain, although described under different names.

### 13. CALAMAGRÓSTIS Adans. Small-reed. (Tab. VIII. f. 12.)

*Panicle* loose or close. *Spikelets* laterally compressed. *Glumes* 2, nearly equal, longer than the floret, which is surrounded by scaly hairs at the base. *Glumellas* 2, membranaceous; outer one (sometimes shortly) awned at the point or back, very rarely awnless. *Neuter floret* wanting, or reduced to a short scale or pedicel. — Named from *καλαμος*, one of the *Palms*, and *αγροστις*, a genus of grasses; a barbarous denomination, only admissible on the ground of its being now generally adopted.

1. *C. Epigéjos* Roth (*Wood S.*); panicle erect close, spikelets crowded unilateral, glumes subulate their keel rough, outer glumella with a dorsal awn from about its middle nearly as long as the glumes, hairs longer than the glumellas, neuter florets none. *Parn. Gr.* t. 16. *Arundo L. : E. B.* t. 403.

In shady moist places, not very common. Dalrymple Wood, Ayr; also in Argyle, and Aberdeenshire, Scotland. 4. 7.

2. *C. lanceolata* Roth (*purple-flowered S.*); panicle erect loose, spikelets scattered spreading, glumes lanceolate their keel smooth, outer glumella with a very short terminal awn between the bifid point and scarcely longer than it, hairs longer than the glumellas, neuter florets none. *Parn. Gr.* t. 84. *Arundo Calamagrostis L. : E. B.* t. 2159.

Moist hedges, in fenny countries, not uncommon. 4. 6. — *Panicle* much smaller and looser than the last; *spikelets* more purple and shining.

3. *C. stricta* Nutt. (*narrow S.*); panicle erect close, glumes lanceolate acute a little rough on the keel with 3 or more nerves, outer glumella bifid nearly as long as the upper glume longer than the hairs, with an awn equal to it in height inserted below the middle, neuter floret rudimentary, leaves of the barren shoots slender. *Parn. Gr.* t. 16. *C. Lapponica Hook. : Parn. Gr.* t. 85. *Deyeuxia Kunth. Arundo stricta Schrad. : E. B.* t. 2160.

Bogs and marshes, very rare. Oakmere in Delaware Forest, Cheshire. White Muir Marsh and Rescobie Loch, near Forfar, now extirpated by drainage. Lough Neagh, and other places in the county of Antrim.  $\mathfrak{A}$ . 6, 7. — Culms  $1\frac{1}{2}$ —3 ft. high. Leaves of the culm broad, of the barren shoots narrower, rigid, and convolute when dry. Panicle 1—4 inches long, at first spreading, afterwards compact. Hairs not half the length of the glumellas. In the Irish plant, called *C. Lapponica* in a former edition of this work, the spikelets are larger, the branches of the panicle shorter, and the uppermost ligule longer and more acute; but in the true *C. Lapponica*, the glumes are described as 1-nerved, the awn is bent, and the hairs are scarcely shorter than the glumellas.

14. *AGROSTIS* Linn. Bent-grass. (Tab. VI. f. 13.)

Panicle loose. Spikelets laterally compressed. Glumes 2, acute, membranaceous, longer than the floret, awnless. Floret sessile, glabrous or with 1—2 tufts of very short hairs at the base. Glumellas 2, unequal; the inner sometimes wanting, the outer with or without an awn. Caryopsis free, oblong or linear. — Name: given by the Greeks to grasses, from *aypos*, a field, because they are so abundant in open places.

\* Upper glume the smaller. Neuter floret 0.

1. *A. canina* L. (brown B.); branches of the panicle long slender erect-patent, glumes unequal lanceolate rough at the keel, outer one 1-nerved, glumella 1 erose at the end 5-nerved with a dorsal awn from below the middle, leaves linear, sheaths smooth, ligule oblong acute. *E. B. t.* 1856: *Parn. Gr. t.* 15.

Moist heathis and moory places, abundant.  $\mathfrak{A}$ . 6, 7. — Very variable in the size and colour of its flowers, purple or green, and in the length of the dorsal awn, which is sometimes included within the glumes, at other times considerably exserted. We have never seen more than one glumella, not even the rudiment of a second; and it is from this circumstance that Schrader has constituted of it the genus *Trichodium*. But other species of *Agrostis* have very reduced glumellas; and *A. setacea*, placed in *Trichodium* by Dr. Lindley, has assuredly an inner one, and that constantly. Smith and Leers have detected an inner one, even in *A. canina*; hence, as the former observes, its presence or absence does not afford even a specific character.

2. *A. setacea* Curt. (Bristle-leaved B.); branches of the panicle short close spreading in flower, glumes unequal lanceolate rough at the keel, outer glumella erose at the end 4-nerved with a long geniculate twisted awn from its base, inner very minute, leaves setaceous, sheaths rough, ligule oblong acute. *E. B. t.* 1188? *Parn. Gr. t.* 83.

Very local, almost wholly confined to the dry downs of the extreme south and south-west parts of England; as Hampshire, Devonshire, and Cornwall.  $\mathfrak{A}$ . 6, 7. — Larger glumella white, thin, and membranous, truncate at the top, with 4 green nerves, of which two, the

lateral ones, project into mucros; *awn* from the very base, rough, truly geniculate and twisted: inner one very small, truncate and toothed, accompanied on each side at the base by a pencil of white hairs.

3. *A. vulgaris* With. (*fine B.*); branches of the panicle smoothish its branchlets spreading after flowering, glumes nearly equal, outer one rough on the keel above, outer glumella 3-nerved, ligule extremely short and truncate.—*α. mutica*; spikelets awnless. *E. B. t.* 1671: *Parn. Gr. t.* 12.—*β. aristata*; spikelets awned. *Parn. Gr. t.* 13. *A. canina* With.—*γ. pumila*; scarcely 3 inches high, spikelets often awned. *Parn. Gr. t.* 12. *A. pumila* Lightf. *Scot p.* 1081 (*fig. in title-page*).

Meadows, pastures, and banks, common everywhere. 4. 6, 7.—*Root* creeping, throwing out many, mostly ascending culms, 1 or 1½ foot high. *Sheaths* usually smooth. *Panicle* purplish; *rachis* smooth, and the branchlets nearly so. *Glumes* lanceolate, smooth, shining, rough on the back. *Glumellas* 2, thin, delicate, membranaceous, unequal; *outer* one a little shorter than the *glumes*, 3-nerved, tridentate, awnless in *α*; bearing an awn of uncertain length, but mostly short, in *β* arising from the central nerve, a little below the middle of the back; *inner glumella* half as small, 2-nerved, bifid. Specimens of this species sometimes, though very seldom, occur, bearing the rudiment of a second floret upon a rather long foot-stalk, in the same calyx.

4. *A. alba* L. (*Marsh B.*); branches of the panicle hispid its branchlets erect after flowering, glumes nearly equal, outer one rough on the keel all over, outer glumella 5-nerved, ligule elongated acute.—*α. culms erect.* *E. B. t.* 1189.: *Parn. Gr. tt.* 13, 14.—*β. stolonifera*; culms with long prostrate scions. *Parn. Gr. t.* 14. *A. stolonifera* L.: *E. B. t.* 1532.—*γ. maritima*; culms procumbent rooting at the joints, panicle small lobed.

Pastures, road-sides, and in various other situations, abundant. 4. 7, 8.—*Plant* stouter than the last, and generally taller. *Culms* ascending, often rooting at the base, and throwing out runners. *Panicle* rather contracted, pale green or purplish, branchlets patent during flowering, more erect afterwards and giving the panicle a compact appearance. *Glumes* like those in *A. vulgaris*, as are the *glumellas*; but the outer one has 5 nerves and as many teeth, and the inner one is only faintly 2- or 3-nerved at the base, nearly entire and obtuse at the extremity. In some there is a short awn at the base of the outer *glumella*; this constitutes the *A. compressa* Willd.; and occasionally the flowers are viviparous, when it is the *A. sylvatica* Linn. We believe all are now agreed that the *A. stolonifera* of authors is identical with *A. alba*: the famous Fiorin-grass of Dr. Richardson and the Irish agriculturalists is certainly so, as has been remarked in former editions of this work. We know of no British awnless *Agróstis* which may not be reduced either to *A. vulgaris* or *A. alba*. The two species are indeed very closely allied.

\*\* *Upper glume the larger, 9-nerved, as long as the lower glumella; lower 1-nerved. Outer glumella with a long awn from near its summit. Neuter floret filiform. Apera.*

5. *A. Spica venti* L. (*spreading, silky B.*); panicle spreading, glumes unequal lanceolate rough at the keel, outer glumella bifid with a subterminal long straight awn, inner one smaller with a small stalk-like neuter floret at its base, anthers linear-oblong. *E. B. t.* 951. *Apera Beauv. Anemagrostis Trin.: Parn. Gr. t.* 17.

Rare, in sandy fields which are occasionally flooded, principally about London: in Norfolk and Lancashire. ☉. 6, 7.—A beautiful grass, with very slender branches to its ample panicle, which is wavy and glossy like silk, well named by old Parkinson "*Gramen agrorum venti spica.*" Awn many times longer than the spikelet, rough. Inner glumella not much less than the outer: at its base is a little neuter floret, resembling a pedicel destitute of flower, which has a small tuft of hair on each side.

6. *A. interrupta* L. (*dense-flowered silky B.*); panicle long contracted narrow, branches half-whorled the lower ones remote, glumes unequal lanceolate rough at the keel, outer glumella bifid with a subterminal long straight awn, inner one smaller with a small stalk-like neuter floret at its base, anthers roundish oval. *Apera Beauv.: E. B. S. t.* 2951. *Anemagrostis Trin.*

Sandy pastures, rare. About Thetford. ☉. 6, 7.—So very closely allied to the last that Trinius at one time proposed to unite them: they only differ by the spreading or contracted panicle, and the linear-oblong or oval anthers, and agree in all the other characters.

\*\* *Spikelets 2—3-flowered: perfect florets 2, very rarely 3; sometimes solitary, with 1—2 imperfect barren florets or a neuter one which is as large as the perfect one or sometimes (in Catabrosa, Molinia, and Melica) rudimentary. (Tab. VI. f. 14. VII. f. 15—22.) (Gen. 15—25.)*

15. *CATABROSA Beauv.* Whorl-grass. (Tab. VI. f. 14.)

*Panicle spreading. Spikelets scarcely compressed, ovate, awnless, with 1—3 perfect florets and often 1—2 neuter ones. Glumes 2, membranaceous, 1-nerved, much shorter than the spikelets, rounded on the back, very obtuse, lower one the smaller, upper crenate or toothed at the end. Glumellas 2, coriaceous, membranaceous only at the extremity, 3-ribbed, truncated and erose at the end, nearly equal. Caryopsis free.—Named from κατὰσπρωσις, a gnawing; from the erose extremity of the glumes.*

1. *C. aquatica* Beauv. (*Water Whorl-grass*); panicle with

whorled patent branches, leaves broadly linear, obtuse. — *α*. larger, spikelets 2—3-flowered. *Parn. Gr.* t. 20. *Aira* L.: *E. B.* t. 1557. — *β*. small, spikelets 1-flowered. *Parn. Gr.* t. 102.

Banks of rivers, and floating in pools of water. — *β*. on the sea-shore in the west of England and Scotland. *γ*. 5, 6. — This is very different in habit and generic character from *Aira*, and from any other grass with which we are acquainted. Mertens unites it to the long-spikeleted *Poas*, which now, according to Smith, form the genus *Glyceria*; but it does not naturally combine with them. Root or caudex very long, branched, floating, jointed, sending from the joints fibrous radicles below, and culms above, a foot or more long, stout, with short broad leaves. Glumes with only a single nerve or midrib, thin and membranous, broadly oval, obtuse. Glumellas of a thick texture, brownish-green, white and diaphanous at the blunted extremity.

# 16. *Aira* Linn. Hair-grass. (Tab. VII. f. 15.)

Panicle lax (rarely contracted). Spikelets laterally compressed, with 2 (or rarely 3 or only 1) perfect florets and sometimes a neuter one which is usually rudimentary. Glumes 2, unequal, about as long as the florets, the outer 1-nerved. Glumellas membranaceous and thin, hairy at the base; the outer one awned at the back, with or without faint lateral nerves, toothed or entire or bifid but not setigerous at the end. Caryopsis glabrous. — Named from *αἰρώ*, to destroy. This name was anciently applied to the *Lolium temulentum* (bearded Darnel), on account of its injurious effects, and now to the present genus of grasses, which has little in common with it.

\* Outer glumella erose or toothed at the end. Caryopsis free, neuter floret subulate.

1. *A. caespitosa* L. (tufted H.); panicle diffuse, branches scabrous, glumes slightly rough on the midrib, upper 3-ribbed, florets hairy at the base rather longer than the glumes, awn straight inserted near the base of and seldom exceeding in length the outer glumella. — *α*. *vulgaris*; sheaths of leaves rough, awn the length of the floret. *E. B.* t. 1453; *Parn. Gr.* tt. 23, 104. — *β*. *brevifolia*; radical leaves short, sheaths smooth, panicle small, awn the length of the floret. *Parn. Gr.* t. 136. — *γ*. *longiaristata*; sheaths smooth, awn projecting one third beyond the floret. *Parn. Gr.* t. 105.

Moist shady places, and borders of fields, plentiful. — *β*. and *γ*. on the mountains. *γ*. 6, 7. — Much tufted. Culms 2—4 feet high. Leaves linear, acuminate, rough at the margin. Ligule long, acute, entire. Panicle large, silvery-grey or greenish, much branched, smaller and purplish in *β*. Spikelets acute. Glumes unequal, lanceolate, subglabrous, rather acute, erose. Florets with a few longish hairs at the base, upper ones pedicellate; their glumellas ovate, obtuse, erose, the

outer one with 4 short teeth, the inner bidd. Mr. Wilson finds it viviparous on Snowdon, with the awn inserted above the middle of the valve. *Var. β.* is frequently collected for the next species, from which it can only be certainly known by the position of the awn: *var. γ.* has sometimes but one fertile floret, when it is *A. conglomerata* Don.

2. *A. alpina* L. (smooth *Alpine H.*); panicle subcoarctate, branches and pedicels perfectly or nearly smooth, glumes smooth on the midrib, upper 3-ribbed, florets as long as the glumes, awn inserted above the middle and scarcely exceeding the glumes in length. *Parn. Gr. tt.* 23, 109. *A. lævigata* E. B. t. 2102.

Moist rocks, on the higher Scottish mountains and in Wales, usually viviparous. 4. 6, 7.—About 1 foot high, very smooth. *Leaves* only scabrous to the touch on the upper side, short. *Panicle* rather small; branches erect; the lower ones, when viviparous (which they mostly are), patent and even drooping. *Spikelets* not numerous, larger than in *A. cæspitosa α.*, and more resembling, as does the whole plant, the *var. β.* and *A. flexuosa*. *Glumes* equal, quite smooth. *Florets* with a short tuft of hairs at the base. *Glumellas* lanceolate, not compressed, lower one slightly jagged at the end. The awn is flat at the base and usually twisted in the flowering specimens; but in the viviparous ones, the awn is straight and subterminal, often a mere point, and the florets are almost quite glabrous at the base. In *A. atropurpurea* Wahl., the panicle is fewer-flowered, and the florets are considerably shorter than the calyx.

3. *A. flexuosa* L. (waved *H.*); panicle (when flowering) diffuse, glumes roughish on the midrib, upper with central and 2 obscure lateral ribs, florets villous at the base as long as the glumes, awn jointed inserted near the base of but much longer than the glumella, leaves setaceous.—*α.* lower floret scarcely longer than the glume. E. B. t. 1519: *Parn. Gr. tt.* 23, 107.—*β. montana*; more slender, lower floret longer than the glume. *Parn. Gr. t.* 108.

Heaths and hilly places; abundant.—*β.* Highland moors, among heather. 4. 7.—Habit of the last, but taller. *Florets* larger and the awns protruded considerably beyond the calyx. *Glumellas* as in the last two species. *Ligule* of the uppermost leaf bidd.

\*\* Outer glumella entire at the end; awn jointed in the middle with a tuft of hairs at the joint, upper portion clavate. Neuter floret wanting. Glumes both 1-nerved.

4. *A. canescens* L. (grey *H.*); panicle rather dense, florets shorter than the calyx, awn clavate shorter than the calyx, leaves setaceous. E. B. t. 1190: *Parn. Gr. t.* 110. *Corynephorus Beauv.*

On the sandy sea-coasts of Dorset, Norfolk, and Suffolk. Jersey. 4. 7.—Remarkable in this genus for having its awn clavate, and



bearing, at the joint, a tuft of hairs; a character which distinguishes it from all other British grasses.

\*\*\* *Outer glumella bifid, at length somewhat cartilaginous and enclosing the caryopsis. Awn geniculate, twisted. Rudimentary neuter floret none. Glumes both 1-nerved.*

5. *A. caryophyllea* L. (*silvery H.*); panicle divaricated, spikelets obtuse at the base, florets scarcely villous at the base shorter than the glumes, awn inserted below the middle jointed longer than the glumes, leaves setaceous. *E. B. t. 812: Parn. Gr. t. 24.*

Gravelly hills and pastures, frequent. 4. 6, 7.—*Culms* 2—6 or 8 inches high. *Leaves* short, few. *Panicle* trichotomous. *Florets* silvery-grey. *Glumes* nearly equal, ovate, gibbous at the base, 1-nerved, the upper part pellucid and white. *Glumellas* scabrous at the back, at length brown, firm, and inclosing the *caryopsis*, apex bifid.

6. *A. præcox* L. (*early H.*); panicle contracted oblong, spikelets somewhat acute at the base, florets scarcely villous at the base about as long as the glumes, awn twisted inserted below the middle and usually near the base longer than the glumes, leaves setaceous. *E. B. t. 1296: Parn. Gr. t. 25.*

Sandy hills and pastures. ☉. 5, 6.—*Culms* 1—3 inches high. *Panicle* few-flowered, pale silvery-green. *Glumes* ovate-lanceolate, scabrous; when seen under a good glass both are 1-nerved; *glumellas* narrow, acuminate, scabrous, the point bifid.—These two last species have the habit of *Aira*, but are scarcely distinct from the 2-flowered species of *Avena*, on account of the *glumellas* hardening and inclosing the *caryopsis*, except by the glumes having only a central nerve.

#### 17. *MOLINIA* Mœnch. *Molinia*.

*Panicle* somewhat contracted or spreading. *Spikelets* awnless, oblong-cylindrical, with 1—5 (or more) *perfect florets* and usually a subulate rudimentary upper *neuter* one. *Glumes* 2, acute, shorter than the florets, unequal, 1-nerved. *Glumellas* 2; outer one rounded on the back, glabrous, entire at the end, at length cartilaginous and covering the free *caryopsis*.—Named in honour of *Don Giovanni Ignatio Molina*, who wrote an account of the Natural History of Chili, published in 1782.

1. *M. carúlea* Mœnch (*purple M.*); panicle erect somewhat contracted, spikelets erect, outer *glumella* usually 3-nerved, culm with one knot near the base.— $\alpha$ . panicle bluish-purple, spikelets 2—3-flowered, outer *glumella* 3-nerved. *Parg. Gr. tt. 20, 230. Melica L.: E. B. t. 750.*— $\beta$ . panicle pale green, spikelets 1-flowered, outer *glumella* 3—5-nerved. *M. depauperata* Lindl.: *Parn. Gr. t. 19. Melica alpina* Don.

Wet heathy places and moors, frequent.— $\beta$ . *Clova* mountains at

an elevation of 3,000 feet. 4. 7, 8.—*Culms* 1—2 feet high or more. All the *leaves*, which are long, linear, and acuminate, spring from the base, or from a single joint immediately above it. *Panicle* 2—8 inches in length, bluish-purple, rarely green. *Glumes* lanceolate, nearly equal. *Florets* generally 2 perfect and 1 sterile; but, if *M. albissima* of Link be only a variety, as supposed by Kunth, the spikelets are sometimes many-flowered. *Anthers* large, purple.—Brooms are made of the culms in England, according to Withering; and, in Skye, Lightfoot says that the fishermen twist them into excellent ropes for their nets.

18. MÉLICA Linn. Melic-grass. (Tab. VII. f. 16.)

*Panicle* lax. *Spikelets* ovate, awnless, with 1—2 perfect *florets* and a club-shaped rudimentary neuter one. *Glumes* 2, nearly equal, shorter than the *florets*, several-nerved. *Glumellas* 2; outer one rounded on the back, entire at the end, at length cartilaginous and enclosing the free *caryopsis*.—Name: *Melica* or *Melliga*, given in Italy to the *Sorghum vulgare*, on account of the sweet flavour of its stem (*mel*, honey), is applied by Linnaeus to this somewhat allied genus.

1. *M. nūtans* L. (*Mountain M.*); panicle nearly simple racemed secund, spikelets drooping ovate 2-flowered. *E. B.* t. 1059: *Parn. Gr.* t. 18.

Woods in somewhat mountainous countries; especially in the north of England and Scotland. 4. 5, 6.—One foot or more high, leafy. *Leaves* linear-lanceolate, flat: *ligule* short and obtuse. *Glumes* ovate, convex, nerved, deep purple-brown, margin pale. Outer *glumellas* large, cartilaginous, unequal, nerved. Between the two perfect *florets* is the rudiment of a third, which is pedicellate, consisting of 2 hardened *glumellas* without either pistil or stamen.

2. *M. uniflora* L. (*Wood M.*); panicle branched slightly drooping, spikelets erect ovate with only one glabrous perfect floret. *E. B.* t. 1058: *Parn. Gr.* t. 18.

Shady woods, frequent. 4. 5—7.—Imperfect floret on rather a long foot-stalk. *Leaves* broader than the last, and whole plant larger. *Scale* of one piece, orange-coloured, thick, "covered by the outer *glumella*:" Wilson.

19. Hólcus Linn. Soft-grass. (Tab. VII. f. 17.)

*Panicle* lax. *Spikelets* laterally compressed, 2-flowered. *Glumes* 2. *Lower floret* perfect, triandrous: *glumellas* 2; outer one awnless, or very rarely awned. *Upper floret* barren, triandrous: *glumellas* 2; outer one awned. *Caryopsis* covered by the indurated *glumellas*.—Named *ἄλκος*, from *ἔλκυ*, to extract; because it was supposed to have the property of drawing out thorns from the flesh!

1. *H. mollis* L. (*creeping S.*); *glumes* acuminate, awn of

barren floret exerted at length geniculate, scabrous all over, joints of the culm with a tuft of hairs, root creeping. *E. B. t. 1170: Parn. Gr. t. 21.*

Pastures and hedges, common.  $\mathfrak{A}$ . 7.—Mr. Wilson well observes that this species is distinguished by the acute (or almost acuminate) glumes and downy joints of the culm.

2. *H. lanátus* L. (*Meadow S.*); glumes rather obtuse mucronate, awn of barren floret included within the glumes at length curved glabrous except near the end, no tuft of hairs at the joints, root fibrous. *E. B. t. 1169: Parn. Gr. t. 21.*

Meadows, pastures, and woods, common.  $\mathfrak{A}$ . 6, 7.—Much resembling the last in general appearance, but clothed with a softer and more abundant pubescence.

## 20. *ARRHENATHERUM* Beauv. Oat-like Grass. (Tab. VII. f. 18.)

*Panicle* lax. *Spikelets* laterally compressed, 2-flowered, with an upper rudimentary neuter one. *Glumes* 2, nearly equal, membranaceous, as long as the florets. *Lower floret* barren, triandrous: *glumellas* 2; outer one with a long twisted geniculate awn above the base. *Upper floret* perfect, triandrous: *glumellas* 2; outer one with a short straight bristle below the point.—Named from *αρρην*, male, and *αθηρ*, an awn. This genus has altogether the habit of *Avena*, from which it differs in the number and structure of its florets.

1. *A. avenaceum* Beauv. (*common Oat-like G.*); leaves flat. *Holcus avenaceus* Scop.: *E. B. t. 813. Avena elatior* L.— $\alpha$ . root fibrous, nodes of the culm usually glabrous. *Parn. Gr. t. 25.*— $\beta$ . root knotted, nodes of the culm downy. *Parn. Gr. t. 26.*

Hedges and pastures, frequent.  $\mathfrak{A}$ . 6, 7.—The *Avena precatoria* of Thuill., *Avena nodosa* of Cullum, *Arrh. bulbosum* Dunal and Lindl., are but varieties, with a knotted or tuberous base to the stem. 2—3 feet high. *Panicle* long, loose. *Spikelets* greenish-brown. There seem to be only two species of this genus, the present and *A. pallens*, which is a Portuguese and very little known plant, with convolute leaves.

## 21. *HIERBÓCHLOE* Gmel. Holy-grass. (Tab. VII. f. 19.)

*Panicle* mostly lax. *Spikelets* laterally compressed, 3-flowered, without neuter florets. *Glumes* 2, nearly equal, membranaceous, about as long as the spikelet. *Central floret* perfect, diandrous; *glumellas* 2, permanently membranaceous. *Lateral florets* barren, triandrous. *Caryopsis* free.—Named from *ιερος*, sacred, and *χλωα*, or *χλωη*, a grass: so called by Gmelin, because, in some parts of the Prussian dominions, it is dedicated to the Virgin

Mary, and strewed before the doors of the churches on festival-days, as the *Sweet-sedge* (*Acorus Calamus*) still is at Norwich.

1. *H. \*borealis* R. et. S. (*Northern H.*); panicle subsecund, peduncles glabrous, florets awnless, outer glumellas ciliated at the margin. *Hook. in E. B. S. t. 2641: Parn. Gr. t. 31.* *Holcus odoratus* Linn.: Sm. *Holc. borealis* Schrad.

In a narrow mountain valley, called *Kella*, in Angushire: *G. Don.* 4. 7. — About 1 foot high, glabrous. *Leaves* linear-acuminate. *Panicle* brownish, glossy. *Spikelets* broadly ovate. *Glumes* ovate, acute, rather unequal, sometimes a little serrated at the point. *Florets* rather longer than the *glumes*: the outer *glumellas* are of a firmer texture, scabrous when highly magnified, distinctly fringed at the margin, the point sharp, but not awned. *Central floret* the smallest. Smell resembling that of *Anthoxanthum odoratum*. In Iceland it is so plentiful as to be used by the people to scent their apartments and clothes. — In this country it has been found only by Don, notwithstanding that Glen Kella, or Cally, a small valley descending from the high mountains at the head of Caness into Glen Isla, has been minutely searched: the specimens we have seen from Don appeared to us to have been cultivated.

## 22. KOELERIA Pers. Koeleria.

*Panicle* spiked, rounded. *Spikelets* laterally compressed, distichous, with 2 or more perfect florets. *Glumes* 2, unequal; membranaceous, keeled, shorter than the florets. *Glumellas* 2, membranaceous, naked at the base; outer one keeled, entire, pointed or with a straight subterminal bristle. *Caryopsis* free. — Named in honour of *George Louis Koeler*, author of a work on German and French Grasses, published in 1802.

1. *K. cristata* Pers. (*crested K.*); panicle interrupted below, outer glumella acute 3-ribbed, leaves narrow, ciliated on the margins or hairy. *Aira L.: E. B. t. 648.* *Airochloa* Link: *Parn. Gr. t. 19.*

Dry pastures; most frequent in the North, and especially near the sea. 4. 6, 7. — *Culm* 6—8 inches high, sometimes more. *Leaves* linear, short in dry places, but sometimes elongated to the length of the culm in damp situations. *Leaves* and *spikelets* very variable as to pubescence, being sometimes glabrous, sometimes villous. *Glumes* acute or slightly acuminate, lanceolate, compressed. *Inner glumellas* white, delicate, reticulated, bifid, with two longitudinal folds.

## 23. SESLERIA Linn. Moor-grass. (Tab. VII. f. 20.)

*Panicle* spiked, rounded or slightly unilateral. *Spikelets* laterally compressed, with 2 or more perfect florets. *Glumes* 2, somewhat unequal, 1-nerved, about as long or longer than the florets. *Glumellas* 2, naked at the base, membranaceous;

outer one keeled, jagged, and with a short bristle at the end. *Caryopsis* free. *Styles* united to above the middle. *Stigmus* filiform, papillose. — Named after *Leonard Sesler*, an Italian physician and botanist.

1. *S. cærúlea* Scop. (*blue M.*); panicle ovate bracteated slightly unilateral, outer glumella jagged with 4 teeth the midrib rough and produced into short bristle. *E. B. t.* 1613: *Parn. Gr. t.* 27. *Cynosurus L.*

Mountains in the north of England and Scotland, especially abundant in limestone regions. 4. 4—6. — One of our earliest grasses, and a very beautiful one. The roots much tufted. Culms 6—12 or 18 inches high. Leaves linear, obtuse, with a minute rough point. Spike of a shining bluish-grey, with large yellow anthers tipped with purple. Spikelets generally in pairs, oblong-ovate, the lower ones with an ovate ciliated and toothed bractea at the base. Glumes ovate-lanceolate, 3-toothed, middle tooth lengthened into an awn and often bifid, pubescent at the keel and margin. Florets longer than the glumes. Outer glumellas 1-ribbed, pubescent and ciliated or jagged with about 5 teeth, the middle tooth lengthened into a short awn; inner one bifid at the point.

#### 24. *PÁNICUM* Linn. Panick-grass. (Tab. VII. f. 21.)

Spikelets flat in front, rounded on the back, 2-flowered, without bristles at the base, usually on one side of the partial rachis, and arranged in a compound spike, raceme, or panicle. Glumes 2; lower one (in front) small, upper as long as the spikelet. Lower (or anterior) floret as long as the upper, barren and triandrous or neuter: glumellas 1—2; outer with the texture of the upper glume and as long. Upper floret perfect: glumellas 2, cartilaginous, enveloping and somewhat adhering to the caryopsis, neither awned nor setigerous, very rarely mucronulate. — Named from *panis*, bread; the seeds of some species being used for bread. — The British species belongs to that section called by Beauv. *Echinochloa*, and distinguished by the spikelets in a compound raceme, the upper glume and lower glumella of the sterile floret with a long awn-like bristle.

1. *P. (Ech.) \*Crus-gálli L. (loose P.)*; "culms erect tufted at the base, leaves linear, acuminate more or less scabrous on the upper side, sheaths glabrous, ligule none, spike compound erect, partial ones alternate unilateral somewhat close-pressed to the compressed triquetrous common rachis, spikelets ovate turgid hispid (greenish), lower glume broadly cordate-ovate with an embracing base mucronate thrice shorter than the spikelet, upper ovate acuminate 8-nerved, neuter floret with 2 glumellas the lower with a longish bristle, caryopsis even gibbous ovate with a hispid point." *E. B. t.* 676. *Echinochloa Beauv.*; *Parn. Gr. t.* 67.

Fields near London. Waste ground near Thetford, Norfolk. ☉.  
7. — The whole group to which the above belongs, is in almost inextricable confusion; and we scarcely know what the naturalized British species really is, or whether there may not be several. For the above character of the true *P. Crus-galli*, we are indebted to Nees v. Esenbeck: he is of opinion that *P. Crus-cori* L. is different, and more allied to *P. colonum*.

25. *SETÁRIA* Beauv. Bristle-grass. (Tab. VII. f. 22.)<sup>1</sup>

*Panicle* in a compound somewhat cylindrical spike. *Spikelets* flat in front, rounded on the back, 2-flowered, 1—3 together, surrounded by an involucre of bristles (abortive spikelets) and falling away from it. *Glumes* 2, awnless; lower one small, upper as long as the spikelet. *Lower floret* as long as the upper, barren and triandrous or neuter: *glumellas* 1—2; outer one with the texture of the upper glume and as long. *Upper floret* perfect: *glumellas* 2; outer the largest, cartilaginous, enveloping and somewhat adhering to the *caryopsis*. — Named from *seta*, a bristle. — To this genus the true *Millets* belong.

1. *S. \*verticillata* Beauv. (*rough B.*); panicle spiked lobed below, branches whorled, bristles of the involucre rough with reversed teeth, outer glumella of the fruit nearly even, lower floret neuter with 1 glumella. *Parn. Gr.* t. 69. *Panicum verticillatum* L.: *E. B.* t. 874.

In cultivated fields, about London and Norwich. ☉. 7, 8.

2. *S. \*viridis* Beauv. (*green B.*); panicle spiked continuous, bristles of the involucre rough with erect teeth, outer glumella of the fruit nearly even, lower floret neuter with one glumella. *Parn. Gr.* t. 68. *Panicum viride* L.: *E. B.* t. 875.

Fields, about London, Thetford, and Norwich. 4. 7, 8.

3. *S. \*glauca* Beauv. (*glaucous B.*); panicle spiked continuous, bristles of the involucre rough with erect teeth, outer glumella of the fruit conspicuous, wrinkled transversely, lower floret triandrous with 2 glumellas.

Weybridge, Surrey: *Mr. Borrer*. New Mill at Hoddesdon, Hertfordshire. ☉. 9. — *Culm* ascending, branched, angled under the inflorescence. *Leaves* linear-lanceolate, bearded at the base. *Spikelets* about 2 in each involucre and only half its length: *bristles* many, rigid. *Lower floret* with 3 stamens, and 2 glumellas. Distinguished by the shorter and more rigid bristles and larger spikelets from *P. verticillatum*, which, along with *P. italicum*, will, we have no doubt, be placed ere long on the list of spurious indigenous plants.

<sup>1</sup> This genus is too closely allied to *Panicum*, and merely differs by some of the spikelets being constantly abortive: there are East Indian species which hold a middle place. It must not, however, be confounded with *Pennisetaria* (or *Pennisetum*), and *Gymnathris*, which are distinct. Although we have in this work placed *Digitaria* at a considerable distance, most of the species are scarcely different from *Panicum*, while some foreign ones belong to *Paspalum*.

\*\*\* *Spikelets with 3 or more, occasionally with only 2, fertile flowers. Glumes 2. (Tab. VII. f. 23—26, and VIII. f. 27—31.) (Gen. 26—34.)*

26. ΠΟΑ Linn. Meadow-grass. (Tab. VII. f. 23.)

*Panicle* lax or contracted, rarely a simple or compound spike. *Spikelets* awnless, ovate or linear and compressed, or subcylindrical, with 3 or more (rarely 2) fertile florets. *Glumes* 2, more or less membranaceous and unequal, shorter than the florets. *Glumellas* 2; outer one subovate, bluntish, rarely tipped with a minute point. *Fruit* free. — Name: ποα, grass or pasturage, from παω, to feed; the whole genus affording an abundant pasturage for cattle.

\* *Spikelets linear or subcylindrical (rarely ovate, with the glumes 1-nerved). Florets rounded on the back at the base.*

† *Outer glumella with 7 prominent ribs and a scarious margin, neither hairy on the ribs nor webbed at the base, subcylindrical, obtuse. Glumes 1-nerved, conspicuously winged. Glyceria.*

1. *P. aquatica* L. (*Reed Meadow-grass*); panicle erect very much branched, spikelets linear of about 5—10 obtuse florets which have 7 ribs. *E. B. t. 1315: Parn. Gr. t. 44. Glyceria Sm.*

Sides of rivers, ponds, and ditches. 4. 7, 8. — *Root* creeping. *Culm* 4—6 ft. high, erect. *Leaves* linear-lanceolate, rough. *Ligule* short, obtuse. *Glumes* small, ovate, obtuse, membranaceous, smoothish. *Outer glumellas* twice as large as the glumes; inner narrower and bifid at the point.

2. *P. fluitans* Scop. (*floating Meadow-grass*); panicle nearly erect slightly branched, spikelets linear appressed of from 7 to 20 obtuse or slightly acute florets which have seven ribs with short intermediate ones at the base, leaves folded at the midrib, root creeping. — α. florets somewhat acute, inner glumella about as long as or projecting beyond the outer one. *Parn. Gr. t. 95. Festuca L. Glyceria Br.* — β. florets obtuse, inner glumella shorter than the outer one. *Poa E. B. t. 1520: Parn. Gr. t. 45. Glyceria Sm. G. plicata Fries. G. hybrida Towns.*

Ditches and stagnant waters, abundant. 4. 7, 8. — Sometimes confounded with *Festuca pratensis* β. but distinguished by the 1-nerved glumes and 7-ribbed glumellas. — *Culms* 1—3 ft. high, thick and succulent. *Leaves* linear-lanceolate; acute, folded at the keel. *Sheaths* compressed. *Ligule* oblong, pointed. *Panicle* with the branches appressed or divaricate, nearly simple or again branched. *Glumes* unequal, small, ovate, membranaceous, obtuse. *Glumellas* ovate-oblong, sometimes thrice as long as the glumes, but variable in that respect; outer one scabrous, obtuse or slightly acute, sometimes toothed. The

scale is of 1 thick fleshy piece, which is the principal character of Mr. Brown's genus *Glyceria*. It is found in New Holland.—We have before us specimens of *Glyceria fluitans*, *hybrida*, and *plicata*, named by Mr. Townsend, who has paid much attention to the subject, but we cannot perceive any characters besides those now adopted, to distinguish this variable species into varieties: there are, however, two forms of  $\beta$ .: one with small spikelets (the outer glumellas twice as long as broad) as in *E. Bot.*, which seems to be the true *G. plicata* of Fries; the other with them as large as in  $\alpha$ . (outer glumella nearly thrice as long as broad), which is the *G. hybrida*, and perhaps the only state of *var. \beta*. found in Scotland. In Fries's plant the leaves are not only folded at the keel, but the margins are also folded inwards, at least in the young state; but there appears to be a form, found by Mr. Purchas (*Phytol.* iii. p. 735), with the margins flat. In general, *var. \alpha*. has the panicle nearly simple, in  $\beta$ . it is branched; but this we do not find constant, and we fear that the position of the branches is as little to be depended on. To those readers, however, who do rely on such points, and on the form and colour of the anthers, there must be at least six or eight varieties or species in this country, and as many, though not quite the same, in N. America. We do not know *G. pedicellata* of Townsend, unless it be another name for his *G. hybrida*.

†† Outer glumella with 5 usually faint but distinct nerves, membranaceous, cylindrical below, often keeled at the tip or with a very minute micro, not webbed at the base. Glumes 3-nerved, unequal. *Sclérochloa*. *Glyceria* Sm

‡ Root creeping.

3. *P. maritima* Huds. (*creeping Sea M.*); panicle erect sub-coarctate (rigid), spikelets linear of 5—10 obtuse apiculate florets which are faintly 5-nerved, the midrib reaching to the point, leaves usually convolute, root creeping. *E. B. t.* 1140: *Parn. Gr. tt.* 42, 99. *Sclerochloa* Lindl.

Sea-coast, frequent. 4. 7.— Culms 8—12 inches high, rigid, glaucous. Leaves involute, somewhat pungent. Ligule ovate, bluntish. Glumes rather acute, shorter than the lowest continuous floret, with 3 ribs. Outer glumella firm, purplish, slightly silky at the base on the central and two lateral ribs.

†† Root fibrous. Rachis and branches of the panicle rough to the touch.

4. *P. distans* L. (*reflexed M.*); panicle spreading, branches at length deflexed, spikelets linear of about 5 (3—6) obtuse florets which are faintly 5-nerved, the midrib not reaching to the points, leaves mostly plane, stem decumbent at the base, root fibrous. *E. B. t.* 986: *Parn. Gr. tt.* 41, 96, 97. *Sclerochloa* Bab. *Glyceria* Sm.

Sandy ground, principally near the sea. Near Dublin. 4. 7, 8. — One foot high. Leaves linear, plane, not pungent. Ligule short, obtuse. Branches of the panicle singularly deflexed, slender.



*Spikelets* not nearly so long as in the last species. *Glumes* much shorter than the contiguous florets, unequal, obtuse, obscurely 3-nerved. *Outer glumella* silky on the midrib, with two lateral nerves at the base. Allied to the last, but very distinct in the smaller *spikelets*, and fibrous root without rooting scions.

5. *P. Borréri* (*Borrer's Sea M.*); panicle spreading, in fruit ascending and patent, spikelets linear of 4—7 florets, outer glumella obsoletely 5-nerved obtuse with a minute point formed by the excurrent midrib, leaves flat, root tufted. *Parn. Gr.* t. 98. *Glyceria Bab.* in *E. B. S.* t. 2797. *G. remota* *Fries.* *G. festucaeformis* *Koch*? *Sclerochloa Borreri* *Bab.*

Brackish places in the south-east of England, not uncommon, often growing with *P. procumbens* and *P. distans*. 4. 7. — “May be distinguished from *P. distans* by its ascending branches when in fruit, the spikelets seldom more than 4-flowered, the exterior glumella pointed, and its dorsal nerve extending to the apex;—from *P. procumbens* by its patent branches, its spikelets not more than half the size, and the erect culm;—from *P. maritima* by the patent branches, its spikes about half the size, and the flat leaves.” *Bab.* Obviously quite intermediate between *P. distans* and *P. procumbens*; can it be a hybrid?

6. *P. procumbens* *Curt.* (*procumbent Sea M.*); panicle compact ovate-lanceolate disticho-secund (rigid), spikelets linear-lanceolate of about 4 florets, outer glumella 5-ribbed obtuse with a minute point formed by the excurrent midrib, leaves flat with inflated sheaths, root fibrous. *E. B.* t. 532: *Parn. Gr.* t. 42. *Sclerochloa Beauv.*

Salt-marshes in various places, apparently not uncommon in England. Very rare in Scotland and Ireland. ☉. 6, 7. — *Culms* procumbent, 6—8 inches long, glaucous. *Leaves* linear, obtuse. *Ligule* short, very blunt. *Panicle* about 2 inches long, branches patent, distichous, their *spikelets* secund. *Glumes* smaller than the florets, obtuse, strongly ribbed. *Florets* oblong, distant upon the rachis, slightly silky at the base.

†† *Outer glumella* with 5 faint but distinct nerves, membranaceous, cylindrical below, naked on the nerves and at the base. *Glumes* 1-nerved, unequal. *Catapodium.*

7. *P. rigida* *L.* (*hard M.*); panicle lanceolate (or sometimes a linear simple spike-like raceme) disticho-secund (rigid), spikelets linear acute of 7—10 florets, outer glumella faintly 5-nerved obtuse with a mucro, glumes acute unequal, upper one reaching to the base of the third floret, root fibrous. *E. B.* t. 1371: *Parn. Gr.* t. 43. *Sclerochloa Beauv.*

Walls, rocks, and dry barren soils, frequent. ☉. 6. — Whole plant very rigid and wiry, 3—6 inches long, ascendent or erect. *Leaves* rigid, linear, setaceous. *Ligule* oblong, jagged. *Rachis* angled, sometimes at once bearing the spikelets (when it much resembles

*Triticum loliaceum*) but more usually throwing out branches. *Calves* nearly as long as the contiguous florets. *Florets* linear-oblong, rather distant, smooth, bluntish; outer *glumella* 5-nerved; the two lateral nerves broad with a white line down the middle, the two intermediate ones very faint.

8. *P. loliacea* Huds. (*dwarf Wheat M.*); spike rigid usually simple unilateral (rarely branched), spikelets linear-oblong of about 8—12 florets, outer *glumella* faintly 5-nerved obtuse with a mucro, glumes obtuse nearly equal, upper one reaching to the base of the fourth floret, root fibrous. *Parn. Gr. t.* 43. *Triticum Sm.: E. B. t.* 221. *Catapodium Link. Sclerochloa Woods.*

Sandy sea-shores of Norfolk, Suffolk, and Essex. North Wales and Isle of Man. East coast of Scotland, and Galloway. ☉. 6, 7. — Singularly stiff and wiry, as much so as *P. rigida*, which it greatly resembles, branching from the very base, 3—4 inches high. *Leaves* linear, rigid, plane. *Spikelets* more or less distant, secund, lower ones sometimes compound.

\*\* *Spikelets* ovate or oblong-ovate. *Outer glumella* with 3—5 parallel nerves, membranaceous below, scarious at the end, compressed, keeled, pointless. *Upper glume* 3-ribbed. *Poa.*

† *Root* creeping, with long scions.

9. *P. compressa* L. (*flat-stemmed M.*); panicle subsecund spreading (afterwards subcoarctate), spikelets oblong of 5—7 obtuse florets, upper sheath as long as or shorter than its leaf, culm compressed, root creeping. — *α.* florets connected by a web, outer *glumella* with 3 silky nerves and sometimes 2 glabrous intermediate ones. *E. B. t.* 365: *Parn. Gr. t.* 37. *P. subcompressa Parn. Gr. t.* 90. — *β.* florets not connected by a web, outer *glumella* 5-nerved. *P. polynoda Parn. Gr. tt.* 39, 91, 92.

On walls, and in dry barren ground, frequent. 4. 6, 7. — One foot or more high, rather glaucous. *Culms* compressed, procumbent at the base. *Leaves* short, linear, acute, upper one as long or longer than its sheath. *Ligule* very short, blunt. *Panicle* not much branched. *Florets* by no means always connected by a web, in French and North American specimens, and in those from this country, there is often not the least trace of it, yet they are not otherwise distinguishable. In *α.* there are usually only three nerves to the outer *glumella*, all of them silky; but an intermediate pair may occasionally be detected, and this constitutes *P. subcompressa* Parn. In *β.* we have always observed 5 nerves, of which sometimes the two lateral ones and the midrib are silky, sometimes only the former, sometimes all are naked.

10. *P. pratensis* L. (*smooth-stalked M.*); panicle diffuse, spikelets oblong-ovate of about 4 florets which are acute 5-nerved webbed, marginal nerves and keel of the outer *glumella*

silky, culm and sheath smooth, upper sheath much longer than its leaf, ligule short, root creeping. *Parn. Gr.* tt. 31, 32, 33, 34. — $\alpha$ . culm tall, leaves broad. *E. B.* t. 1073. — $\beta$ . leaves narrow. *P. angustifolia* L. — $\gamma$ . *subcærulea*; smaller and glaucous. *P. subcærulea* *E. B.* t. 1004.

Meadows and pastures, frequent. — $\beta$ . in shady places. — $\gamma$ . on walls or dry places, especially in alpine countries.  $\gamma$ . 6, 7. — Allied to the last in character, but very unlike in general appearance, and more resembling *P. trivialis*, which differs by both the ligule and the root, as well as by the marginal nerves of the outer glumella being always hairy. — $\beta$ . and  $\gamma$ . appear to be starved states.

†† Root fibrous, or slightly creeping, but without long scions. Keel of the outer glumella silky.

‡ Marginal nerves of the outer glumella glabrous.

11. *P. trivialis* L. (*roughish M.*); panicle diffuse, spikelets oblong-ovate of about 3 florets which are acute 5-nerved connected by a web, outer glumella silky only on the midrib, upper sheath much longer than its leaf, culms and sheaths roughish, ligule oblong acute, root fibrous. *E. B.* t. 1072: *Parn. Gr.* t. 35.

Meadows and pastures, common.  $\gamma$ . 6, 7. — Culm 1—2 ft. high. Leaves linear, acute. Panicle much branched. — An excellent grass for pasture and for hay, as is the last species.

†† Marginal nerves of the outer glumella silky.

‡ Root perennial.

12. *P. bulbosa* L. (*bulbous M.*); panicle close subspicate, spikelets ovate 3—4-flowered, florets silky at the keel and marginal nerves connected by a web, leaves with a white narrow serrated cartilaginous margin, upper sheath much longer than its leaf, ligule prominent acute, stems swollen at the very base. *E. B.* t. 1071: *Parn. Gr.* t. 89.

East and south of England, principally on sandy sea-shores.  $\gamma$ . 4, 5. — A singular and very distinctly marked species, soon withering after flowering, and then its bulbs are blown about in large quantities on the surface of the sand. It forms a great part of the herbage on the *Denes* at Yarmouth.

13. *P. alpina* L. (*alpine M.*); panicle erect spreading when in flower afterwards somewhat ovate, spikelets ovate of 3—5 acute florets free (not webbed), outer glumella silky at the keel and marginal nerves, upper sheath longer than its leaf, leaves broadly linear obtuse, uppermost cymbiform at the apex, ligule of the upper leaves oblong acute, of the lower ones short obtuse, root fibrous tufted. *E. B.* t. 1003: *Parn. Gr.* tt. 37, 94. — $\beta$ . *glomerata*? spikelets densely crowded.

Extremely abundant on the lofty mountains of Scotland and Wales, and very generally viviparous. —  $\beta$ . Banks of the Esk: *G. Don*. 4. 6, 7. — Culms 6—12 inches high, nearly erect. Leaves mostly short, flat, linear, obtuse, with a very small mucro; uppermost "folded, compressed, and rounded behind the summit." *Parn. Spikelets* rather large, close. *Glumes* ovate-lanceolate, much compressed; dorsal rib scabrous, terminating in a very short point or awn, with two short lateral ribs or nerves at the base. Outer *glumellas* ovate-lanceolate, acute; dorsal rib and two lateral nerves silky, downy between them below, upper part glabrous, purple, margin diaphanous.

14. *P. laxa* Hænk. (*wavy M.*); panicle contracted lax slightly drooping, spikelets ovate of 3—4 acute florets, outer *glumellas* silky at the keel and marginal nerves glabrous between them, upper sheath longer than its leaf, upper ligule long and acute, leaves all flat narrow linear acuminate, root fibrous. —  $\alpha$ . florets connected with a web. *P. flexuosa* *E. B. t.* 1123. *P. minor* *Gaud.* —  $\beta$ . florets without a web. *P. laxa* *Parn. Gr. t.* 38 (and most others).

Ben Nevis, *Mr. J. Mackay*. Loch na Gar, and Clova mountains, *G. Don* (since confirmed by *Dr. Graham &c.*). 4. 7, 8. A very slender subglaucous grass, scarcely able to support the weight of its own panicle, which consequently droops slightly. Leaves more numerous than in *P. alpina*, and much narrower. Florets very obscurely ribbed, all very acute, green and purple, with diaphanous margins, sometimes connected by a web, sometimes free. *Glumes* nearly equal. Both varieties have been found in each of the two localities.

15. *P. nemoralis* L. (*Wood M.*); panicle slender, spikelets ovate or lanceolate of 2—5 florets, florets silky at the keel and marginal nerves, uppermost sheath usually as short as its leaf, ligule obtuse or truncate, root slightly creeping. —  $\alpha$ . upper sheath as short as the leaf, ligule extremely short truncate, florets slightly webbed. *E. B. t.* 1265: *Parn. Gr. t.* 36. —  $\beta$ . uppermost sheath usually longer than its leaf, ligule extremely short truncate, florets free. *P. glauca* *Sm.* (partly). *P. Parnelli* *Bab.: E. B. S. t.* 2916: *Parn. Gr. t.* 93. —  $\gamma$ . uppermost sheath as short as the leaf, its joint about the middle of the culm, ligule prominent obtuse, spikelets greenish, florets free. *P. montana* *Parn. Gr. t.* 39. —  $\delta$ . uppermost sheath as short as its leaf, its joints near the base of the culm, ligule prominent obtuse, spikelets purplish, florets free. *P. cæsia* *Sm.: E. B. t.* 1719: *Parn. Gr. t.* 40. *P. glauca* *E. B. t.* 1720? —  $\epsilon$ . uppermost sheath as short as its leaf, ligule prominent obtuse, florets webbed. *P. Balfourii* *Parn. Gr. t.* 66.: *E. B. S. t.* 2918.

Common in woods and thickets. —  $\beta$ . Snowdon, Cwm Idwell, and other Welsh mountains. Upper Teesdale. —  $\gamma$ . Ben Lawers. —  $\delta$ . and  $\epsilon$ . Scotch mountains. 4. 6, 7. — A very variable species,

and to which we have no hesitation in referring all the above supposed species. Our specimens of *P. glauca* (apparently the *P. glauca* Gaud.) from Wales, given to us by Mr. W. Wilson, precisely accord with *P. Parnelli*, from which *P. montana*, gathered by us in 1824 on Ben Lawers, cannot be distinguished except by being still more starved and slender, and by the greater length of the ligule, and shorter sheath to the upper leaf: both have only 2—3 florets in the spikelets. *P. cæsia*, again, and *P. Balfourii* (which last only differs from *P. Gaudini* by being a little more glabrous) have broader spikelets of 3—5 florets, usually of a purplish colour, although variable in that respect, and are indistinguishable from each other, except by the web of the florets, which however is sometimes almost inconspicuous in Dr. Balfour's own specimens, and disappears by cultivation. Although we have arranged the above as so many varieties, in order that our readers may see the characters on which they depend, we remain of the opinion stated in former editions, that all the mountain varieties might be advantageously united.

|| || *Root annual.*

16. *P. annua* L. (*annual M.*); panicle subsecund divaricated somewhat triangular, spikelets oblong-ovate of about 5 florets which are a little remote 5-ribbed destitute of web, the midrib and all the nerves more or less silky, upper sheath longer than its leaf, ligule oblong acute, culm ascending compressed, root fibrous. *E. B. t.* 1141: *Parn. Gr. tt.* 40, 41.

Meadows and pastures, and by road-sides, everywhere. ☉. 4—9. — *Culms* 6—10 inches long, below prostrate and throwing out roots. *Leaves* distichous, linear, rather blunt, flaccid, often waved, bright green. *Glumes* very unequal, ovate-lanceolate, rough at the back, 3-nerved. *Outer glumella* ovate-lanceolate, acute, white and diaphanous at the margin.

27. *TRIÓDIA* Brown. Heath-grass. (Tab. VII. f. 24.)

*Panicle* racemed. *Spikelets* compressed, with 2—4 fertile florets. *Glumes* 2, about equal, 3-ribbed, as long as the florets. *Glumellas* 2; outer somewhat coriaceous, rounded on the back, hairy at the base, 3-toothed at the summit; teeth nearly of the same length, middle one straight (sometimes bristle-shaped). — Named from *τρεις*, *three*, and *ὀδὸν*, *a tooth*.

1. *T. decumbens* Beauv. (*decumbent H.*); panicle of few racemed spikelets, ligule a tuft of hairs. *Parn. Gr. t.* 30. *Poa E. B. t.* 792. *Festuca L. Danthonia DC.*

Abundant in dry mountain-pastures, heaths, and moors. ♀. 7. — *Culm* 1 foot long, procumbent; flowering culms only erect. *Leaves* linear, acuminate, hairy as well as the sheaths. *Glumes* nearly equal, as long as the whole spikelet, lanceolate, acute, 3-nerved with broad thin margins, scabrous on their keels. *Outer glumella* ovate, 5-nerved or ribbed for its whole length, having a small tuft of hairs on

each side at the base; apex with three teeth. *Inner glumella* obtuse, entire at the point, ciliated at the angles of the fold. — In habit very distinct from *Poa*. The genus is, indeed, now placed by Nees v. Esenbeck among the *Chlorideæ*, and consists of two groups, — the New Holland ones, which have the florets nerved only near the summit, — and the European and American species, forming the genus *Diplachne* of Presl (not Beauv.), in which the florets are nerved throughout.

28. *Briza* Linn. Quaking-grass. (Tab. VII. f. 25.)

*Panicle* lax. *Spikelets* much compressed, ovate or deltoid, with 3—8 closely imbricated florets. *Glumes* 2, nearly equal, broad, much shorter than the spikelet. *Glumellas* 2, awnless: *outer* cymbiform, obtuse, at length coriaceous and rounded on the back below, with a scarious margin; *inner* small and flat. *Caryopsis* adnate with the *glumellas*. — Name: *βριζα*, some kind of corn; probably from *βριθω*, to droop or bend down, as do the spikelets, which are most delicately suspended.

1. *B. média* L. (*common Q.*); spikelets broadly ovate of about 7 florets, glumes shorter than the lowermost florets, ligule truncate or obtuse usually very short. *E. B.* t. 340: *Parn. Gr.* t. 30.

Meadows and pastures, frequent. 4. 6. — Whole plant very elegant. *Culms* slender, 1 ft. or more high. *Leaves* short, linear-acuminate. *Branches* of the *panicle* thread-shaped, divaricating, purple. *Spikelets* tremulous with the slightest breeze, very smooth, shining purple, more or less green or greenish-white at the edges. *Glumes* very concave, subcompressed. *Outer glumella* much like the *glumes*, *inner* one minute, resembling a flat scale.

2. *B. minor* L. (*small Q.*); spikelets triangular about 7-flowered, glumes longer than the florets, ligule elongated lanceolate acute. *E. B.* t. 1316: *Parn. Gr.* t. 101.

Fields in the extreme south of England, very rare. About Bath and in Cornwall. Guernsey and Jersey. ☉. 7. — Whole plant much smaller than the last.

29. *Dactylis* Linn. Cock's-foot-grass. (Tab. VII. f. 26.)

*Panicle* with the secondary branches short and very dense, subsecund. *Spikelets* with 3 or more florets, compressed, without a bractea at the base. *Glumes* 2, unequal, shorter than the spikelet; *outer* one keeled. *Glumellas* 2; *outer* one keeled, and ciliated at the back, 5-nerved, lanceolate, with a short bristle close to the point, inclosing the *caryopsis*. — Except in habit, this genus is scarcely distinguishable from *Poa*, *Koeleria* and *Festuca*. — Name: *δακτύλος*, a finger.

1. *D. glomerata* L. (*rough C.*); branches of the *panicle* with

ovate clusters of spikelets, leaves linear flat the margins scabrous, stem erect, root tufted. *E. B. t.* 335: *Parn. Gr. t.* 29.

Way-sides, meadows, and woods, abundant. *4.* 6—7. — *Culm* 1—2 feet high. *Leaves* rather broadly linear, acuminate, scabrous. *Panicles* secund. *Spikelets* of 3—4 florets, thickly clustered on the branches, clusters ovate: branches sometimes long distant and spreading, sometimes short and approximated, when the whole panicle resembles a single cluster. *Glumes* membranaceous, smaller than the lowermost *floret*, lanceolate, acuminate, unequal, glabrous, scabrous at the back, more or less obliquely keeled. *Outer glumella* subcartilaginous, lanceolate, much compressed, scabrous, 5-ribbed, ciliated at the keel, with a short awn close to the point. Said to be advantageously cultivated for cattle.

### 30. *CYNOSÚRUS* Linn. Dog's-tail-grass. (Tab. VIII. f. 27.)

*Panicle* spiked, unilateral. *Spikelets* with 2—5 perfect *florets*, distichous, with a pectinated bractea or involucre (an abortive spikelet) at its base. *Glumes* 2, equal, membranaceous, much shorter than the spikelet, 1-nerved, keeled, shortly awned. *Glumellas* 2, membranaceous, linear-lanceolate; outer awned below the extremity or mucronate, faintly 5-nerved. — Named from *κυν*, a dog, and *οψα*, a tail; from the shape of its spike.

1. *C. cristátus* L. (*crested D.*); raceme in a linear spike, florets with a very short awn. *E. B. t.* 316: *Parn. Gr. t.* 28.

Dry pastures, frequent. *4.* 7. — *Stem* 1—1½ foot high, slender. *Leaves* narrow, linear, acuminate. *Raceme* secund. *Involucres* beautifully pectinated, one at the base of each spikelet, their divisions linear, acute, greenish, subglumaceous, a little curved, rough. *Spikelets* 3—5-flowered. *Glumes* lanceolate, nearly equal, membranaceous, rough at the keel, as long as the *floret*. *Outer glumella* lanceolate, obscurely nerved, green, scabrous, especially at the keel, terminating in a short rough awn; *inner* white, bifid, pubescent at the angles of the fold. — A valuable agricultural grass.

2. *C. echinátus* L. (*rough D.*); raceme in an ovate spike, florets with awns as long as the *glumellas*. *E. B. t.* 1333: *Parn. Gr. t.* 28, 129.

Sandy sea-shores of the extreme south of England, as Kent and Sussex. Field at Hough-End, 2 m. south of Manchester. Guernsey and Jersey. ☉. 7.

### 31. *FESTÚCA* Linn. Fescue-grass. (Tab. VIII. f. 28.)

*Panicle* lax or coarctate. *Spikelets* many-flowered, more or less laterally compressed, without a bractea on the base. *Glumes* 2, unequal, membranaceous, usually keeled, much shorter than the spikelet. *Glumellas* 2, lanceolate; outer rounded on the back, acuminate or awned at or close to the summit, the lateral nerves slightly converging and disappearing below the sum-

mit; *inner* minutely ciliated at the ribs. *Styles* terminal. *Caryopsis* glabrous, free.— Name of uncertain origin; the Romans applied it in various ways, and among others to a grass.

\* *Root-leaves* very narrow, not broader than those of the culm. *Awn* of the *floret* terminal.

† *Florets* monandrous, shorter than their awns. *Glumes* very unequal. *Vulpia*.

1. *F. uniglumis* Soland. (*single-glumed F.*); panicle a simple erect two-ranked subsecund raceme, lower glume very minute, florets not ciliated. *E. B. t.* 1430; *Parn. Gr. t.* 112.

On the sandy sea-coast, principally of Sussex. On the coasts of Essex, Suffolk, Dorsetshire, and Anglesea. ☉. 6. — A plant remarkable for the minuteness and apparent suppression of one of its *glumes*, by which the species is at once known.

2. *F. bromoides* L. (*barren F.*); panicle secund, glumes very unequal the upper one as long as the lowermost contiguous floret, florets not ciliated, scabrous towards the summit. — *α.* flowering panicle erect-patent, culm above leafless. *E. B. t.* 1411; *Parn. Gr. tt.* 54, 55. — *β.* panicle drooping at the end, culm sheathed and leafy to near the panicle. *Parn. Gr. t.* 111. *F. Myurus* Sm. (not L.): *E. B. t.* 1412. *F. pseudo-myurus* Koch.

Dry pastures and on walls, less frequent in Scotland, but not rare about Edinburgh. — *β.* Frequent in England; rare in Scotland, as at Forfar. ☉. 6. — Culms 6—12 inches high. *Leaves* linear, setaceous, complicate. *Glumes* very unequal, lanceolate, acuminate, rough at the keel; lower one sometimes minute, occasionally half as long as the upper, usually about a third of its length, 1-nerved; upper 3-nerved, and scarcely ever shorter than the lowest floret (exclusive of its awn) on the same side. Lower *glumella* scabrous towards the point, but we have not observed it so much so or so low down as in the true *F. Myurus*. *Awn* often twice as long as its floret. *F. Myurus* L. (*Parn. Gr. t.* 55) has the upper glume only half as long as the lowermost contiguous floret, and the florets tubercular-scabrous on the back above the middle; we notice it, because, if no mistake (of which however we are suspicious) has occurred about the locality attached to it, we have a specimen collected near Edinburgh.

†† *Florets* triandrous longer than their awns.

3. *F. ovina* L. (*Sheep's F.*); panicle subsecund subcoarctate, spikelets oblong of about 4—7 florets with short awns, leaves flat or involute-setaceous, ligule 2-lobed. — *α.* culms short somewhat 4-angled and scabrous-pubescent below the small panicle, leaves involute-setaceous, root fibrous tufted. *E. B. t.* 585; *Parn. Gr. tt.* 56, 57. *F. vivipara* Sm.: *E. B. t.* 1355. *F. caesia* Sm.: *E. B. t.* 1917. *F. tenuifolia* Sibth. — *β.* culms



taller many-angled and somewhat glabrous below the broader panicle, leaves of the culm often flat but afterwards usually involute, root tufted or slightly creeping. *F. duriuscula* L.: *E. B. t.* 470: *Parn. Gr. tt.* 58, 59, 60. —  $\gamma$ . culms usually tall many-angled and glabrous below the often broadish panicle, leaves of the culm flat at length sometimes involute, root creeping, the scions ending in erect shoots with distichous leaves. *F. rubra* L.: *E. B. t.* 2056. *F. duriuscula* var. *Parn. Gr. t.* 60.

$\alpha$ . Abundant in dry and elevated pastures. —  $\beta$ . Pastures and waste ground. —  $\gamma$ . — Light sandy or rarely in wet places. 4. 6, 7. — Whole plant more or less glaucous, and having a purple tint in the spikelets. — Root of  $\alpha$  much tufted and scarcely at all creeping, with numerous, mostly short, often curved leaves, which afford excellent food for sheep in hilly situations; in  $\beta$  it is less tufted and shows a greater tendency to creep; while in  $\gamma$ , at least when growing in sand, it is extensively creeping.<sup>1</sup> Culms in  $\alpha$  seldom above a foot high, often only half that height, while in the two other varieties it is seldom so short as one foot, usually more, and sometimes upwards of 2 feet high. Panicle of  $\alpha$  usually small and narrow, often scarcely 1½ inch long, in  $\beta$  and  $\gamma$  it varies from 1½ to 4 inches long. Glumes nearly glabrous, scarcely half the length of the lowermost floret on the same side. Florets in all the varieties sometimes nearly glabrous, sometimes pubescent upward or even hairy all over, terminated by an awn which very rarely exceeds half the length of the glumella, often considerably shorter and sometimes obsolete. After a careful reconsideration of these plants, we recur to the opinion, given about 30 years ago in the *Flora Scotica*, that *F. rubra* is not distinct from *F. duriuscula*: there is no difference between them in the herbarium, and even in the fields there are states of the latter which puzzle us: again, the usual forms of *F. duriuscula* and *F. ovina* present a considerable difference to the eye, though there is a deficiency of characters; we therefore prefer uniting them, while mentioning all the alleged distinctive marks.

\*\* Root-leaves flat, broader than those of the culm. Bristle or awn (when present) arising from below the summit of the outer glumella. *Schedonorus*.<sup>2</sup>

† Ligule of the uppermost sheath prominent, obtuse. Outer glumella 3-nerved.

4. *F. sylvatica* Vill. (*Reed F.*); panicle subsecund much branched spreading nearly erect, spikelets of 3—5 acute awnless

<sup>1</sup> "We have a series in this tribe in the structure of the root: first *tenuifolia*, which seems to have the least of a creeping rhizoma; then *ovina* and *duriuscula*, where it is very slender; next *rubra*, of our hills and meadows, where it is stouter and perhaps 2 or 3 inches long; and lastly that of the sand-hills, where it is sometimes as many feet." *Woods in Phytol.* III. p. 361.

<sup>2</sup> From *exuber*, near, and *agor*, the extremity; in allusion to the awn, not as often misprinted *Schedonorus*, though Pal. de Beauvois, the authority for the genus, prints it *Schedonorus* in his Index. Nees v. Boenbeck remarks that, in the species of *Festuca*, the hypogynous scales are 2-toothed; in *Schedonorus*, lanceolate and entire, and in *Bromus*, obovate and entire.

scabrous 3-nerved florets, outer leaves linear-lanceolate. *Poa Pollich: Parn. Gr.* tt. 44, 100. *F. Calamaria Sm.: E. B. t.* t. 1005. — *β. minor*; leaves narrower, florets about 2. *F. æcidua E. B. t.* 2266.

Mountain-woods, not uncommon. *℥.* 7. — Culms 2—3 ft. high, with broad leaves. Glumes narrow, linear-lanceolate, very unequal, smaller one single-nerved, larger one thickened at the margin and as if 3-nerved. Florets rather distant on the rachis. Outer glumellas lanceolate-acuminate, scabrous, often also denticulate on the midrib throughout.

†† Ligule of the uppermost sheath very short, scarcely perceptible. Outer glumella 5-ribbed. Bucetum *Parn.*

5. *F. pratensis* Huds. (*meadow F.*); panicle close never divaricated, branches in pairs one bearing a single spikelet, the other a solitary or several spikelets sometimes wanting, spikelets 5—10-flowered, outer glumella 5-ribbed with a very short or obsolete awn, leaves linear-lanceolate. — *α.* some or all of the branches of the panicle in pairs, one usually with several spikelets. *E. B. t.* 1592: Bucetum *Parn. Gr.* t. 46. — *β.* branches of the panicle solitary reduced to a single spikelet which is sessile or shortly stalked below. *F. loliacea Sm.: E. B. t.* 1821. Bucetum *lol. Parn. Gr.* tt. 45, 113, 114.

Moist meadows and pastures, banks of rivers, &c., common. — *β.* more rare. *℥.* 6, 7. — We no longer hesitate to separate *F. pratensis* from *F. elatior*, in consequence of the observations of Mr. H. C. Watson; but we are less disposed to unite *F. loliacea* Sm. to *F. pratensis*. Mr. Watson, however, remarks that “they pass into each other by the most complete gradation of intermediate forms, and that spiked and panicked (branched) racemes may be seen on the very same root” (*Lond. Journ. Bot.* iii. p. 80); this appears not only to settle the point, but to indicate that *F. loliacea* ought to be regarded as a peculiar state of *F. pratensis*, rather than as a variety. But we are not so certain that Mr. Watson’s is the plant intended by Smith, who says that the outermost glume is “strongly ribbed, not keeled,” and the figure in *E. Bot.* represents it with at least 5 strong ribs; whereas, in all forms of *F. pratensis* we have seen, the outermost glume is always keeled, has never more than 3 ribs, and they are by no means strongly developed: to Mr. Watson’s plant Bucetum *loliaceum* of Parnell *Gr.* t. 45. certainly belongs. But there is another, Parnell *Gr.* t. 113, in which the outer glume is flat with 5—8 very strong whitish ribs, thus agreeing with Smith’s description, as it otherwise does with the figure: in it the spikelets are all solitary, almost quite sessile, and awless. This we should have retained as a distinct species, did not Parnell figure at t. 114. an intermediate form, having a convex

<sup>1</sup> This character applies to all our British species of *Festuca*, except *F. sylvestris*; hence Dr. Parnell places it in *Poa*. In *Bromus* the ligule of the uppermost sheath is also prominent.

slightly keeled 5-nerved larger glume, which, however, we have not seen.

6. *F. elatior* L. (*Tall F.*); panicle diffuse patent much branched, branches divaricated after flowering mostly in pairs each with 2 or more (usually numerous) spikelets, spikelets 5—6-flowered, outer glumella 5-ribbed with a very short or obsolete awn, leaves linear-lanceolate. *E. B. t.* 1593. Bucetum *Parn. Gr. tt.* 46, 47. *F. arundinacea* Schreb.

Moist pastures and banks of rivers, not unfrequent. 4. 6, 7. — We have a specimen "from the side of the river Esk," with the panicle coarctate; but as it is only in flower it may afterwards assume the divaricated appearance which best characterizes the present from the next species: it is the *F. longifolia* Don, and has been recognized by Nees v. Esenbeck as certainly belonging to *F. elatior*.

7. *F. gigantea* Vill. (*tall bearded F.*); panicle branched drooping towards one side, spikelets lanceolate 3—6-flowered awned, outer glumella 5-nerved shorter than its awn, leaves linear-lanceolate ribbed. — *a.* panicle larger and more drooping, spikelets about 5-flowered. *E. B. t.* 1820. *Bromus* L. Bucetum *Parn. Gr. t.* 47. — *β.* panicle smaller and more erect, spikelets fewer about 3-flowered, leaves narrower. *F. triflora* Sm.: *E. B. t.* 1918.

Shady woods and moist hedges. — *β.* in Norfolk, and near Forfar in Scotland, probably not unfrequent. 4. 7, 8. — A sea-side grass, 3—4 feet high, with broad leaves, having the habit and some of the characters of *Bromus*, but usually arranged by authors with *Festuca*. Ligule of the uppermost sheath very short. Panicle large. Spikelets with 3—6 florets. Glumes very unequal, larger ones with 3 ribs. Outer glumella lanceolate, obscurely ribbed, nearly glabrous, membranaceous at the edge upward; awn very long, inserted a little below the bifid point: inner glumella scabrous or very minutely ciliated on the nerves. Styles certainly terminal.

### 32. *BRÓMUS* Linn. Brome-grass. (Tab. VIII. f. 29.)

Panicle lax or coarctate. Spikelets many-flowered, more or less laterally compressed. Glumes 2, unequal, usually keeled, equal to or shorter than the lowermost florets. Glumellas 2, herbaceous; outer one rounded on the back, two of the lateral nerves usually uniting with the middle one and forming an awn below the bifid extremity; inner one conspicuously ciliated on the ribs. Styles from below the summit of the *caryopsis*, which is villous at the apex and "adheres to the upper glumellas." — Named from *βρομος*, given by the Greeks to a kind of oat, and that again from *βρομα*, food.

\* Lower glume with one, upper with 3—5, nerves. Florets lanceolate.

1. *B. erectus* Huds. (*upright B.*); panicle simple erect, spike-

lets linear-lanceolate, florets subcylindrical remote about twice as long as the straight awn diverging in flower afterwards erect, outer glumella obscurely 7-nerved, that of the lowermost floret one-third longer than the smaller glume, sheaths somewhat hairy the hairs pointing upwards, root-leaves very narrow ciliated. — *α*. spikelets glabrous. *E. B.* t. 471 : *Parn. Gr.* t. 51. — *β*. culms and spikelets hairy.

In fields and by road-sides, especially in a sandy soil over chalk. In the King's Park, Edinburgh. 4. 6, 7. — *Culms* 2—3 feet high. This is truly perennial, which does not appear to be the case with any other *Bromus*. Its habit is that of *Brachypodium sylvaticum*. The root-leaves are narrow: upper leaf much broader. Spikelets erect. Awn shorter than the larger glume.

2. *B. asper* L. (*hairy Wood B.*); panicle slightly branched drooping, spikelets linear-lanceolate, florets remote subcylindrical hairy about twice as long as the straight awn, diverging in flower afterwards erect, outer glumella 5—7-ribbed, that of the lowermost floret twice as long as the smaller glume, sheaths with hairs pointing downwards, leaves uniform the lower ones hairy. *E. B.* t. 1172 : *Parn. Gr.* t. 51.

Moist woods and hedges. ☉ or ♂ *Sm.* (4 *Schrad.*). 6, 7. — *Culm* 4—6 feet high; leaves broad. Awn shorter than the larger glume.

3. *B. stérilis* L. (*barren B.*); panicle drooping slightly branched, spikelets linear-lanceolate, florets remote subcylindrical scabrous shorter than the straight awn diverging during and after flowering, outer glumella with 7 distinct equidistant ribs, leaves and sheaths pubescent. *E. B.* t. 1030 : *Parn. Gr.* t. 50.

Waste ground, fields and hedges; common. ☉. 6. — *Culm* 2 feet high. Remarkable for its long, narrow, much-awned, and drooping spikelets.

4. *B. diándrus* Curt. (*upright annual B.*); panicle erect slightly branched, spikelets linear-lanceolate, florets remote subcylindrical subscabrous about as long as the straight awn diverging during and after flowering, outer glumella 7-ribbed, rib on each side of the dorsal one obscure, two marginal ones approximated, stamens 2 (3, *Schrad.*), lower sheaths with hairs pointing downwards. — *α*. stem glabrous, rachis and pedicels scabrous. *E. B.* t. 1006 : *Parn. Gr.* t. 50. *B. Madritensis* L. — *β*. panicle compact, upper part of the stem, rachis, glumes and very short pedicels pubescent. *B. rigidus* Roth.

Rare, on sandy barren wastes, principally in the south of England. About Edinburgh and coast of Fife, Scotland (occasionally). ☉. 6, 7. — One foot high. Allied to *B. stérilis*; but the panicle is

smaller, erect or erect-patent, often purplish. From this, *B. tectorum* is principally distinguished by the drooping panicle.<sup>1</sup>

5. *B. máximus* Desf. (*great B.*); panicle erect lax at length nodding slightly branched, spikelets lanceolate downy long-stalked after flowering, florets remote subcylindrical downy about half the length of the straight awns diverging during and after flowering distinctly 7-ribbed, outer glumella of the lowest floret equal to the larger glume, leaves downy on both sides. *E. B. S. t.* 2820: *Parn. Gr. t.* 115.

On the sands of St. Aubin's Bay, the Grève d'Azette and the Quenvais, Jersey. ☉. 6, 7. — Distinguished by its long awns, the larger glume being as long as the adjacent glumella, the conspicuous equidistant 7 nerves to the glumella, and "by a sharp conical point at the base of the florets." *Parn. Stamens* often only 2.

\*\* Lower glume with 3—5, upper with 7—9 nerves. Florets oblong, turgid, erect. Serrafalcus.

† Outer glumella 7-nerved.

6. *B. secalinus* L. (*smooth Rye B.*); "panicle loose drooping in fruit, lower peduncles slightly branched, simple peduncles about equalling the oblong compressed glabrous spikelets, florets at first imbricated afterwards distinct cylindrical, the incurved edges of the glumellas not overlapping those of the floret above them, awn straight about as long as the floret, leaves hairy but the sheaths nearly glabrous." *Wats. in Hook. Lond. Journ. of Bot. i. p.* 85. Serrafalcus *Bab.* —  $\alpha$ . spikelets scabrous but glabrous and shining not downy. *E. B. t.* 1171 (*good, but panicle too long*): *Parn. Gr. tt.* 49, 121, 122. —  $\beta$ . panicle nearly simple, spikelets downy. *Parn. Gr. t.* 123. *B. velutinus* Sm. *B. multiflorus* *E. B. t.* 1884.

Corn-fields, not rare. ☉ or ♂. 6, 7. — *Culm* 2—3 feet high. Known in fruit by its hairy panicle, and separately rolled-up flowers. Distinguished also from its allies by "the apex of the larger glume being situated half-way between the base of the glume and the summit of the second floret on the same side;" and by having the outer glumella "rounded on the upper margin, with the breadth (when flattened) considerably greater than half its length." *Parnell*.

7. *B. commutatus* Schrad. (*tumid Field B.*); "panicle loose

<sup>1</sup> *B. tectorum* L. (*drooping annual B.*); panicle lax drooping slightly branched, spikelets linear-lanceolate, florets remote subcylindrical scabrous or downy about as long as the straight awn, diverging during and after flowering, outer glumella 7-ribbed, rib on each side of the dorsal one obscures the two marginal ones approximated, leaves downy on both sides.

Near the new mill at Hoddesdon, Hertfordshire (certainly introduced with flax and cole-seed from the oil-mills.) ☉. 6. — Larger glume shorter than the adjacent floret. Upper part of the culm and branches of the panicle usually downy but sometimes glabrous. We have not seen English specimens, and have therefore taken our description from Swiss and Montpellier ones, considered to be this species; but foreign botanists seem very much puzzled with it, if we may judge from the specimens sent under the same name.

slightly drooping in fruit, lower peduncles often elongated and branched, simple peduncles equalling or exceeding in length the oblong-lanceolate glabrous spikelets, florets loosely imbricated, when in fruit the glumellas only slightly overlapping at their edges near the base, awn straight about as long as the floret, leaves and their sheaths hairy." *H. Wats. in Hook. Lond. Journ. of Bot.* i. p. 84: *Parn. Gr.* tt. 124, 125. *B. arvensis* *Parn. Gr.* t. 49. *Serrafalcus Bab.* *B. pratensis* *E. B.* t. 920 (*small specimen*).

Road-sides and corn-fields, frequent. ☉ or ♂. 6, 7.—This species, says Mr. H. Watson, who has studied the British Brome-grasses with great attention, is known by its glossy grey-green spikelets acquiring a brownish tinge in sunny spots, its longer and harsher peduncles than those of *B. mollis* and *racemosus*, and its glumellas larger and more inflated than in *B. secalinus* and *arvensis*. Apex of the larger glume half-way (or a little more) between its base and the summit of the second floret on the same side. *Inner glumella* shorter than the outer one, and only reaching to the base of the awn, which is rather shorter than its floret; *outer glumella* when flattened twice as long as broad, 7-ribbed. Dr. Parnell refers without doubt, *E. B.* t. 920, to his *B. mollis* var. *pratensis*, *Gr.* 18. Smith himself, in the *E. Flora*, considered it to represent *B. racemosus*; but Dickson's plant (*Hort. Sicc.* 18. 5.) referred to by Smith, is that form of *B. commutatus* figured by Parnell at t. 124.

8. *B. mollis* L. (*soft B.*); "panicle close ovate erect in fruit, slightly branched, simple peduncles shorter than the crowded ovate somewhat compressed pubescent spikelets, flowers closely imbricated, awn straight about as long as the florets, sheaths of the leaves pubescent or hairy." *H. Wats. in Hook. Lond. Journ. of Bot.* i. p. 84: *E. B.* t. 1078 (*good*): *Parn. Gr.* tt. 48, 116, 117, 118. *Serrafalcus Parl.* — *β.* panicle quite simple, peduncles very short, leaves and spikelets densely pubescent.

Meadows, pastures, banks, road-sides, fields, &c. everywhere. — *β.* sandy ground, Lizard, Cornwall. ☉ or ♂. 6. — *Culm* 1—2 ft. high. *Panicle* 2—3 inches long. *Spikelets* standing nearly erect. *Florets* 5—10. *Outer glumellas* convex, by no means forming such cylindrical florets as in the two last species. Apex of the larger glume half-way between its base and the summit of the third floret on the same side, sometimes a little longer, as in Mr. Parnell's var. *ovalis*, tab. 117. (where the *spikelets* are shorter than usual), and sometimes reaching almost half-way to the summit of the fourth floret on the same side (var. *pratensis*, tab. 118.). The *glumes* and *outer glumellas* are downy, but are not otherwise scabrous on the midrib: in the next species they are toothed or scabrous towards the summit, although otherwise glabrous: *Parn.*

9. *B. racemosus* L. (*smooth B.*); "panicle elongated erect in fruit, peduncles nearly simple about equal to the ovate subcompressed glabrous spikelets, florets imbricated compressed, awn straight about as long as the glume, sheaths of the leaves slightly

hairy." *H. Wats.* in *Hook. Lond. Journ. of Bot.* i. p. 84: *E. B.* t. 1079: *Parn. Gr.* tt. 48, 119. *Serrafalcus Parl.*—"β. panicle nearly or quite simple, peduncles very short." *Bab.*

Meadows and pastures. — β. sandy ground in the south. ☉ or ♂. 6. — To us this appears scarcely different from the last, except in being more glabrous: as in it, the summit of the larger *glume* is midway between its base and the summit of the third *floret* on the same side. Dr. Parnell remarks that, when the outer *glumella* is opened out, its upper margins form an angle at the point, giving it a lanceolate or acuminate form, instead of being nearly rounded as in *B. mollis*.<sup>1</sup>

10. *B. \*arvensis* L. (*taper Field B.*); "panicle spreading loose slightly drooping in fruit, lower peduncles much elongated simple or branched, simple peduncles longer than the linear-lanceolate compressed spikelets, florets imbricated in fruit, *glumellas* shorter than the awns with 2 prominent ribs on each side near the margin." *H. Wats.* in *Hook. Lond. Journ. of Bot.* p. 85: *E. B.* t. 1984 (*glumes too narrow*): *Parn. Gr.* t. 126. *Serrafalcus Godr.*

Southampton Bay; Coast of Durham; near Hebden Bridge, Yorkshire; Box-Hill. ☉. 7, 8. — "This has longer peduncles than the 3 preceding species, and the smallest *glumellas*, the latter resembling those of *B. commutatus* in acquiring a purple tinge, but differing in the prominent ribs or nerves on each side." *Mr. H. C. Watson* (who, however, considers this species not to be really a native of Britain). Dr. Parnell remarks that it is readily distinguished from *B. commutatus*, by the inner *glumella* being acute and as long as the outer one, which is 7-ribbed, two of the ribs being prominent near each margin. Apex of the larger *glume* reaching half-way from its base to the summit of the second *floret* on the same side. *Awns* rather longer than the *glumellas*, straight, slightly spreading when dry. *Anther* four times as long as broad.

†† *Outer glumella 9-nerved.*

11. *B. \*pátulus* Koch (*Spreading B.*); panicle spreading loose drooping in fruit, lower peduncles much elongated simple or branched, simple peduncles scarcely longer than the linear-lanceolate compressed spikelets, florets imbricated in fruit, *glumellas* rather shorter than the nearly straight awns with 3 prominent ribs on each side. *Parn. Gr.* t. 127. *Serrafalcus Bab.*

Near Hebden Bridge, Yorkshire; *Mr. Gibson*. ☉. 6. — Certainly introduced. Inner *glumella* shorter than the outer, and only reaching to the base of the awn. *Awns* slightly spreading when dry. Apex of the larger *glume* reaching midway from its base to the

<sup>1</sup> Dr. Schultz has lately united *B. racemosus* L., *B. commutatus* Schr., and *B. secalinus*, under the name of *B. mutabilis*: the two former have the sheaths, especially the lower ones, hairy: in the last they are glabrous. *B. mollis* he distinguishes by being more densely pubescent, and by having the sheaths and leaves distinctly longitudinally furrowed with elevated nerves.

summit of the second *floret* on the same side. *Anthers* twice as long as broad. — A plant, with which we are imperfectly acquainted: seems too closely allied to the last, and, according to Mr. Babington, has the *glumella*, like it, sometimes only 7-nerved.

12. *B. squarrosus* L. (*Corn B.*); panicle drooping, peduncles simple lower ones about as long as the oblong- or ovate-lanceolate subcompressed spikelets, florets imbricated in fruit nearly glabrous, glumellas about as long as the at length divaricating awns with 3 prominent ribs on each side, leaves pubescent. *E. B. t.* 1885: *Parn. Gr. t.* 118. *Serrafalcus* Bab.

Corn-fields; Somersetshire, Essex, Kent, and Surrey. ☉. 6, 7. — A most distinct species, remarkable for its spreading awns: it is however certainly an introduced plant, and we fear *B. secalinus* and *commutatus* are equally doubtful natives. Inner *glumella* shorter than the outer, and reaching only to the base of the awn. Apex of the larger *glume* reaching half-way from its base to the summit of the second *floret* on the same side. *Anthers* twice as long as broad.

33. *AVENA* Linn. Oat, or Oat-grass. (Tab. VIII. f. 30.)

*Panicle* lax. *Spikelets* laterally compressed, with 2 or more perfect florets and sometimes 1 or more rudimentary neuter ones. *Glumes* 2, membranaceous, 3- or many-nerved. *Glumellas* 2, lanceolate, hairy at the base, herbaceous, at length cartilaginous and firmly inclosing the *caryopsis*; outer one with a long twisted geniculate dorsal awn, with two points or bristles at the summit. — Name of doubtful origin, which we cannot trace to any language older than the Latin; perhaps, therefore, from *fœnum*, hay.

Smaller *glume* 5—7-nerved, larger one 5—11-nerved. Outer *glumella* 6—8-nerved. *Spikelets* ultimately drooping. Ovary hairy at the top. Annual plants.

1. *A. fétua* L. (*wild O.*); panicle erect, spikelets drooping of about 3 scabrous much-awned florets smaller than the glumes with long fulvous hairs at the base, outer *glumella* bifid at the summit, root fibrous. *E. B. t.* 2221: *Parn. Gr. t.* 27.

Corn-fields, frequent. ☉. 6—8. — *Culm* 2—3 ft. high. Leaves linear-lanceolate. *Ligule* obtuse. *Glumes* large, membranous, ovate-lanceolate, shining at the margins, keeled, acuminate, many-ribbed. Outer *glumella* with long fulvous hairs at its base, bifid at the point. Awn of each *floret* long and twisted, and constituting an excellent hygrometer. — The cultivated Oat, *A. sativa*, differs from it in having one or more upper florets imperfect and awnless, in the shorter awn and absence of fulvous hairs at the base of the florets.

2. *A. strigosa* Schreb. (*Bristle-pointed O.*); panicle erect, branches all secund, spikelets of 2 perfect florets each awned as long as the glumes and terminated by 2 long straight bristles. *E. B. t.* 1266: *Parn. Gr. t.* 26.



Corn-fields; common both in England and Scotland. ☉. 6, 7. — *Ligule* oblong, often ragged. Very much like *A. sativa*, but readily distinguished from it, as well as from *A. sativa*, by the florets ending in two long bristles.

\*\* *Smaller glume 1—3-nerved, larger one 3-nerved. Outer glumella distinctly 5-ribbed. Spikelets erect. Ovary hairy at the top. Ligule acute. Perennial plants.*

3. *A. pratensis* L. (*narrow-leaved perennial O.*); panicle erect simple or slightly compound lax, spikelets erect oblong compressed of 3—6 florets, lower floret scarcely so long as the larger glume, leaves glabrous but more or less scabrous on the surface, root tufted. — *α. vulgaris*; lower leaves involute, sheaths rounded nearly smooth, spikelets 3—5-flowered. *E. B. t.* 1204. *Trisetum Parn. Gr. t.* 52. — *β. longifolia*; lower leaves long flat and linear, sheaths flattish slightly keeled roughish. *Trisetum Parn. Gr. t.* 52. — *γ. alpina*; lower leaves short flat, sheaths rounded or compressed roughish, spikelets 5—6-flowered. *Trisetum Parn. Gr. t.* 53. *A. alpina Sm. A. planiculmis E. B. t.* 2141.

Dry pastures, heathy and mountainous places. — *β.* “moist shady woods near the sea, in the neighbourhood of Edinburgh.” — *γ.* Highland mountains. *℥.* 6, 7. — Lower peduncles mostly in pairs, one longer than the other, and both simple; sometimes the longer one bears 2 or rarely 3 distant spikelets, so that the whole panicle has a lax appearance, very different from what we find in the next; but as it is now ascertained that *A. pratensis* has occasionally the sheaths flattened, there is a possibility that *A. planiculmis* may be only another form of it.

4. *A. planiculmis* Schrad. (*flat-stemmed O.*); panicle erect compound interrupted, spikelets erect nearly cylindrical linear-oblong of 5—7 florets, lower floret longer than the longest glume, leaves scabrous broadly linear suddenly acute minutely serrated, sheaths flat sharply carinated scabrous, lower part of the culm slightly compressed two-edged. *E. B. S. t.* 2684.

Glen Sannox, on the ascent of Goat-Fell from Loch Rannoch, Isle of Arran, Scotland: *Mr. Stuart Murray. ℥.* 7. — *Mr. Murray*, who discovered this interesting grass in 1826, has ever since cultivated it in the Glasgow Botanic Garden, where it preserves all its characters, of which none are so striking as the flat, sharply carinated sheaths and the great breadth of its leaves, which in cultivated specimens (where the plant is nearly 3 feet high) are  $\frac{1}{2}$  an inch in breadth. Their width, too, is almost equal throughout, at the extremity suddenly coming to a sharp point. *Panicle* with many, erect, rather rigid branches. *Spikelets* much longer and larger than in *A. alpina*, the larger glume scarcely reaching half-way to the summit: in *A. pratensis* and *A. alpina Sm.* the larger glume is about two thirds (or more) of the length of the whole spikelet.

5. *A. pubescens* L. (downy O.); panicle erect nearly simple, spikelets erect of about 2 or 3 florets, scarcely longer than the glumes, lower leaves plane and the sheaths downy, edges smooth. *E. B. t.* 1640. *Trisetum Pers. : Parn. Gr. t.* 53.

Dry pastures, especially in chalky or limestone countries. 4. 6, 7.

\*\*\* *Smaller glume 1-nerved, larger 3-ribbed. Outer glumella keeled with faint lateral nerves, ending in two bristles. Spikelets erect. Ovary glabrous. Ligule short and obtuse. Perennial plants.*

6. *A. flavescens* L. (yellow O.); panicle much branched lax, spikelets of about 3 florets equal in length to the longer of the very unequal glumes, outer glumella with two terminal bristles, lower leaves and sheaths hairy. *E. B. t.* 952. *Trisetum Beauv. : Parn. Gr. t.* 54.

Dry meadows and pastures, frequent. 4. 7. — It has the smallest flowers of all our *Out-grasses*, and may readily be distinguished by that circumstance, by the two terminal bristles on the outer valve of the cor., and by the very unequal glumes. *Pedicels* of the *florets* downy with a small tuft of hairs at the top, and there is also a terminal abortive floret, reduced to a pedicellated bristle, hairy at its base.

#### 34. PHRAGMITES Trin. Reed. (Tab. VIII. f. 31.)

*Panicle* loose. *Spikelets* distichous, with 3—4 many distant perfect florets and a barren one at the base, which are all enveloped in long silky hairs attached to the rachis of the spikelet. *Glumes* 2, membranaceous, unequal, shorter than the floret, the lower much smaller. *Glumellas* 2, membranaceous; lower ending in a long subulate awnless point. — Name: *φραγμιτης*, an enclosure, or materials for an enclosure, these reeds being used for that purpose.

1. *P. communis* Trin. (common R.); panicle spreading, spikelets coloured about 5-flowered, longer than the glumes, leaves lanceolate acuminate-cuspidate. *Arundo Phragmites L. : E. B. t.* 401 : *Parn. Gr. t.* 29. ●

Abundant in ditches, margins of lakes, rivers, &c. 4. 7, 8. — *Culms* 6 ft. or more high, usually erect, rarely prostrate and very long (20—40 feet) (*Bromfield*.) *Panicle* large, purplish-brown, at length drooping, very handsome. *Glumes* very unequal: outer ovate-lanceolate, many-ribbed; inner twice as long, thin, membranaceous, obsolete ribbed. As the flowers advance, the tufts of hair increase, at length becoming very silky. This plant frequently forms patches of immense extent, called *Reed-roads* in some parts of the east of England, which harbour many aquatic birds, and the rare *Parus biarmicus* or bearded tit-mouse. Much use is made of the culms, for thatching, garden-screens, for walls and floors which are afterwards covered with clay, &c. — Two sorts of *Reeds* were distinguished by the Romans, the larger one called *Arundo* which was the *δοναξ* of the Greeks, and the

*Phragmites*; and as they are now almost universally recognized as distinct genera, we adopt the latter for our British species.

b. *Spikelets spiked, either sessile or shortly stalked, and arranged in a simple or compound spike or spike-like raceme.* (Tab. IX. f. 42. e. f. g.) (Gen. 35—44.)

\* *Spikelets inserted on different sides of the common axis or rachis, sometimes slightly unilateral.* (Tab. IX. f. 42. e. f.) (Gen. 35—41.)

### 35. *E'LYMUS* Linn. Lyme-grass. (Tab. VIII. f. 32.)

*Spikelets* in pairs from the same joint of the *rachis*, each with 2—4 fertile florets. *Glumes* 2, collateral (both on one side of the spikelet), awnless. *Glumellas* 2, covering and usually incorporated with the *caryopsis*. — Name: *ελυμος*, given by the Greeks to the *Panic-grasses*, perhaps because they grew abundantly about *Elyma* in Greece. *Théis*.

1. *E. arenarius* L. (*upright Sea L.*); spike close erect, rachis flat but not winged, florets as long as the lanceolate downy glumes. *E. B. t.* 1672: *Parn. Gr. t.* 64.

Sandy sea-shores, frequent. 4. 7. — Root much creeping in the loose soil; hence this grass becomes of great value, like the *Ammophila arenaria*, for preserving a considerable extent of our own coasts and those of Holland from the encroachments of the sea. Culms 3—4 ft. high, glabrous. Leaves glaucous, involute, pungent. Spike 4—6 in. long. *Spikelets* of about 3 flowers on the rachis. *Glumes* 2, lanceolate, acuminate, downy. *Outer glumella* resembling them, but broader; *inner* bifid at the point, ciliated on the nerves or angles.

2. *E. geniculatus* Curt. (*pendulous Sea L.*); spike lax bent downwards, rachis winged, glumes subulate glabrous longer than the florets. *E. B. t.* 1586: *Parn. Gr. t.* 131.

Near Gravesend, in a salt-marsh: very rare. 4. 7. — A most remarkable plant, apparently quite distinct from the preceding; yet we cannot but wish some one would study it in its locality, *Gravesend*, which is the only station recorded for it in this country: it is said to have been likewise found in Holland. We possess something very like it in a diseased state of *E. arenarius*, gathered in Scotland by Mr. M<sup>r</sup> Nab.

### 36. *HORDEUM* Linn. Barley. (Tab. VIII. f. 33.)

*Spikelets* in threes from the same joint of the *rachis*, 1—2 usually neuter or barren: fertile ones with a perfect floret and a rudimentary neuter one. *Glumes* 2, collateral, awned. *Glumellas* 2. — Name of dubious origin.

\* *Lateral spikelets perfect, middle ones usually neuter (or imperfect?).*

1. *H. sylvaticum* Huds. (*Lyme-grass* or *Wood B.*); all the

glumes setaceous and scabrous (not ciliated), outer glumella of all the spikelets half the length of its awn. *Parn. Gr.* t. 130. *Elymus Europæus* L. : *E. B.* t. 1317.

Woods and thickets, especially in a chalky soil, apparently not rare in the midland and northern parts of England, but not found in Scotland. 4. 7, 8. — In former editions of this work reasons were given for uniting this to *Hordeum*, rather than to *Elymus*: we have now removed it, but have placed it in a separate section.

**\*\* Lateral spikelets neuter, middle one perfect.**

2. II. *pratense* Huds. (*Meadow B.*); all the glumes setaceous and scabrous (not ciliated), outer glumella of the middle spikelets about as long as its awn, of the lateral ones with a short awn. *E. B.* t. 409 : *Parn. Gr.* t. 11.

Moist meadows and pastures in England, frequent; rare in Scotland, as about Edinburgh and Ayr, but only occasionally. ☉. 6, 7.

3. II. *murinum* L. (*Wall B.*); glumes of the middle spikelet linear-lanceolate ciliated, of the lateral ones setaceous scabrous, outer glumellas of all the spikelets shorter than their awns. *E. B.* t. 1971 : *Parn. Gr.* t. 10.

Waste ground, by walls and road-sides; common in England, rare in Scotland. About Edinburgh, and at Elgin, which seems its most northerly range. ☉. 6, 7.

4. II. *maritimum* With. (*Sea-side B.*); inner glume of the lateral spikelets semi-ovate, the rest setaceous, all scabrous (not ciliated), awn of the outer glumella in the middle spikelet longer than those of its glumes, in the lateral ones half as long. *E. B.* t. 1205 : *Parn. Gr.* t. 10.

Light dry pastures and sandy ground near the sea, not rare in England. Rare in Scotland and principally found in Angushire. ☉. 6. — All our British grasses of this genus are admirably characterized by the form, &c. of their *glumes*. The present is the smallest species, procumbent at the base and glaucous.

**37. TRITICUM Linn. Wheat, or Wheat-grass. (Tab. VIII. f. 34.)**

*Spikelets* solitary, transverse, the sides (not the backs) of the glumes and florets directed to the rachis, compressed, many-flowered. *Glumes* 2, opposite, nearly equal, both have 3 or more nerves or ribs. *Glumellas* 2, lanceolate, outer one acuminate or awned at the summit, inner bifid at the point, minutely ciliated on the ribs. *Caryopsis* free.—There are two natural groups in this genus: 1st, the large annual species foreign to our country, which are cultivated so extensively as *Bread-corn*; and, 2dly, the smaller perennial species, many of which are natives with us. These some authors look upon as 2 distinct genera, *Triticum* and *Agropyrum* (*Beauv., Lindl.*). We have

only the latter genus or group in Britain. — Name: *Triticum*, “quod tritum est e spicis;” because it is thrashed or beaten from the spikes.

1. *T. cristatum* Schreb. (*crested W.*); spike short with closely imbricated 3—5-flowered spikelets, glumes subulate with a terminal awn 6-nerved, outer glumellas 5-nerved with an awn as long as themselves, rachis of the spike and spikelets slightly downy, leaves hairy on their upper surface, culm rough. *E. B. t.* 2267: *Parn. Gr. t.* 61.

“On steep banks and rocks by the sea-side between Arbroath and Montrose:” *G. Don*, who alone has found it. 4. 7. — A plant almost peculiar to the east of Europe and Asia, rarely occurring (and perhaps only when introduced) in the south of Europe, not, we believe, a native of France, and which could not have been indigenous to the station assigned above. On one side of the midrib (or that which runs into the awn) of the glumes there are 2, on the other 3 ribs. It somewhat resembles *Hordeum maritimum*, but is at once distinguished by the solitary several-flowered spikelets.

2. *T. junceum* L. (*rushy Sea W.*); spikelets distinct 4—6-flowered, glumes obtuse many-ribbed, outer glumella obtuse or slightly mucronulate 5-nerved, rachis of the spike smooth or minutely toothed on the angles, leaves involute pungent, root creeping. —  $\alpha$ . rachis of the spike smooth, of the spikelets smooth or slightly downy especially on the angles. *E. B. t.* 814; *Parn. Gr. t.* 63. —  $\beta$ . rachis of the spike slightly toothed at the angles, of the spikelets somewhat downy.

Sandy sea-shores frequent.  $\beta$ . Vazon Bay, Guernsey; and S. Bré-lade, Jersey. 4. 7, 8. — Whole plant glaucous, rigid,  $1\frac{1}{2}$ —3 ft. high. *Spike* long. *Spikelets* oblong, much compressed, distant in  $\alpha$ . approximate in  $\beta$ . but never imbricated. *Glumes* oblong-lanceolate, often 3-toothed at the summit, oblique, usually 6-ribbed; the midrib, which is the longest and sometimes forms a small apiculus, is not in the centre, but has always more ribs or nerves on one side than on the other; often there are 1 on the one side and 4 on the other, sometimes 2 on the one side and 3 on the other; besides these principal ribs, there are usually intermediate smaller ones at the base, which disappear about the middle. *Outer glumellas* similar to the glumes but equal-sided, often with a blunt mucro formed by the excurrent midrib. It is not always easy to distinguish this from the next; but it may be generally recognized by the florets being more cartilaginous, the leaves involute, and the angles of the general rachis not ciliated with minute bristles, and at all times by its obtuse not acuminate *glumes* and *glumellas*.

3. *T. repens* L. (*creeping W.*, or *Couch-grass*); spike elongated, spikelets 4—8-flowered, glumes acuminate awned or awnless 5—7-ribbed, outer glumella acuminate or with an awn scarcely ever so long as the glumella 5-nerved, rachis of the spikelets scabrous, leaves plane or slightly involute at the edge,

root creeping. — *α.* green, rachis of the spike glabrous or downy rough with ascending short bristles on the angles, leaves flat. *E. B.* t. 909: *Parn. Gr.* tt. 62, 63. — *β.* glaucous, rachis of the spike nearly quite smooth, leaves more or less involute at the edges. *T. littorale* *Host.*

Fields and waste places, everywhere. — *β.* near the sea. ☉. 6—8. — In habit between the preceding and the following species. *Var. β.* must be carefully distinguished from *T. junceum*, and is best known by the acute, or (in this country we believe always) awned florets. The common variety is the pest of cornfields, being difficult to be extirpated, on account of its long creeping roots.

4. *T. caninum* *Huds.* (*fibrous-rooted W.*); spike elongated, spikelets approximate 2—5-flowered, glumes 3—4-ribbed, and as well as the 5-ribbed outer glumella acuminate awned, rachis of the spike hispid on the angles, of the spikelets harshly downy, leaves flat, root fibrous (perennial). — *α.* spikelets 4—5-flowered, awn of the florets usually longer than its glumella, leaves rough on both sides. *E. B.* t. 1372: *Parn. Gr.* t. 62. — *Elymus L.* — *β.* spikelets 2—4-flowered, awn of the florets 3 (or more) times shorter than its glumella, leaves glabrous except on the margin. *T. biflorum* *Mitten* in *Lond. Journ. Bot.* vii. p. 532 (scarcely of *Brignoli*). *T. alpinum* *Don.*

Woods and banks, frequent. — *β.* Ben Lawers; *G. Don.* 4. 7. — Best distinguished from the last by its fibrous roots. The glumes have only 3 principal nerves or ribs, but occasionally a smaller and shorter one may be seen on the side between the lateral nerve and the midrib. Such specimens as we have examined of *Don's T. alpinum* are indistinguishable from *T. caninum*, except by the above characters, and these are obviously owing to its being found in an elevated situation. What the *T. biflorum* of *Brignoli* really is, we do not know, further than that he describes it with an annual root, and constantly 2-flowered spikelets, and that he never found more than one tuft of it.

### 38. BRACHYPÓDIUM *Beauv.* False Brome-grass.

(Tab. VIII. f. 35.)

*Spikelets* solitary, transverse to the rachis, alternate, remote, linear, cylindrical-compressed, many-flowered. *Glumes* 2, opposite, unequal, shorter than the contiguous lowest floret. *Glumellas* 2, rounded on the back, 7-ribbed, setigerous or awned at the extremity; inner one retuse, coarsely fringed on the ribs above. — Named from *βραχυς*, short, and *πους*, a foot; from the sessile or nearly sessile spikelet. This genus holds an intermediate place between *Bromus* and *Triticum*: from the former it differs by the sessile spikelets, and the terminal awn; from the latter, by the unequal glumes, long, almost cylindrical or only slightly compressed spikelets, and inner glumellas coarsely fringed on the ribs above the middle.

1. *B. sylvaticum* Beauv. (*slender F.*); spike drooping, spikelets solitary nearly cylindrical secund, awns of the upper florets longer than their glumellas, leaves flat flaccid, root fibrous. *Festuca E. Fl.* v. i. p. 149. *Bromus Poll.: E. B.* t. 729. *Triticum Mærch: Parn. Gr.* t. 61.

Woods and hedges, not frequent. 4. 6, 7. — *Culms* 2 feet high. *Leaves* broadly linear-lanceolate, hairy on the upper surface. *Glumes* unequal, lanceolate-acuminate, about 7-nerved. *Outer glumella* linear-lanceolate, about 7-nerved, scabrous or sometimes hairy; *inner* one truncate, the two green ribs or folds strongly ciliated on the upper half.

2. *B. pinnátum* Beauv. (*Heath F.*); spike erect, spikelets nearly cylindrical distichous hairy, awns of the upper florets shorter than their glumellas, leaves rigid, root creeping. — *a.* leaves flat. *Festuca E. Fl.* v. i. p. 150. *Bromus L.: E. B.* t. 730. *Triticum Parn. Gr.* tt. 132, 133, 136, 137. — *β.* leaves involute. *Parn. Gr.* t. 134.

Open fields and heathy places, on chalky soil, in Yorkshire, Cumberland, Oxfordshire, Leicester, Worcester, Gloucester, Somerset, Bedford, Cambridge, Suffolk, Norfolk, Essex, Kent, Sussex, Dorset, and perhaps several other counties. — *β.* near Bath. 4. 7. — a very graceful plant. A monstrosity sometimes occurs with a tuft of spikelets at the same point of the rachis (*Parn. Gr.* t. 135.).

### 39. *LÓLIUM* Linn. Darnel, Rye-grass. (Tab. VIII. f. 36.)

*Spikelets* solitary, compressed, approximate, placed edgewise to the rachis, alternate, with 3 or more perfect florets. *Glumes* solitary, or 2 and the one next the rachis small; outer one with several nerves about as long or longer than the lowest contiguous floret. *Glumellas* 2, outer one awnless or awned. — Name: “quasi *dolium*, *δολιον*, quod dolosum sit vel adulterinum. Fit enim e corruptis Triticici ac Hordei seminibus.” The ancients as well as the moderns attributed poisonous qualities to the *L. temulentum*; and even now it is erroneously believed in some countries that the *Wheat* changes into *Darnel*.

1. *L. perénne* L. (*perennial or beardless R.*); spikelets 6—8-flowered, glume solitary scarcely longer than the lowest floret, florets lanceolate awnless or nearly so, root producing leafy barren shoots. *E. B.* t. 315: *Parn. Gr.* t. 65.

Way-sides, pastures, and waste places, frequent. 4 or 5. 6, 7. — *Culms* 1—2 feet high. *Spike* with the general aspect of *Triticum repens*, sometimes, from luxuriance when cultivated, compound. *Florets* linear-oblong, nerved. What is supposed to be a variety is found by Mr. H. C. Watson, at East Moulsey, with awns as long as in the following, and this is probably Mr. Babington's var. *aristatum*; but if the two species are not to be characterized by the awn, we fear they must be conjoined. The root, which is perennial in

the wild plant, ceases, as is well known to every agriculturalist, to be so in particular situations, and becomes biennial even when the greatest care has been taken to obtain the seed from genuine perennial plants. Some foreign botanists and Mr. Babington allow that both have awned spikelets and say they differ by *L. perenne* having the young leaves simply folded, the other with their margins involute. If such be the only distinction, it is surely a most subtle and uncertain one, and they had better be conjoined, as proposed by Bartoloni and Dr. Parnell.

2. *L. \*multiflorum* Lam. (*bearded R.*); spikelets 6—14-flowered, glume solitary scarcely so long as the lowest floret, florets lanceolate awned, roots producing leafy barren shoots. *L. italicum* A. Braun. *L. perenne* var. Parn. Gr. tt. 138, 139, 140, 141.

Many parts of England and Scotland, but apparently only near places where it had been cultivated. 4 or 5, sometimes 6. — We consider the perennial form of this species to be the wild one, the root having, like the preceding species, become biennial or even annual by over-cultivation. Like it too, when once degenerated, the seeds never again produce a perennial root.

3. *L. \*linicola* Sonder (*annual or Flax R.*); spikelets oblong or ovate 7—11-flowered, glume solitary reaching to the middle (or further) of the spikelet, florets shortly awned or awnless elliptical, in fruit tumid, root annual without barren leafy shoots. — Mitten in *Lond. Jour. Bot.* vii. p. 531: *E. B. S.* t. 2955.

On cultivated land, amongst various crops, about Hurstpierrepont, Sussex; field near Catterick Bridge, Yorkshire. 6. — With this we are not well acquainted, and authentic specimens appear to have been equally unknown to Kunth. It seems to be truly annual, and scarcely to differ from the next.

4. *L. temulentum* L. (*Darnel*); spikelets about 6-flowered equal to or shorter than the glume, florets awned or awnless elliptical in fruit tumid, root annual without barren shoots. — a. florets with rigid awns about as long as or longer than the glumella. *E. B.* t. 1124: *Parn. Gr.* tt. 64, 142. — b. florets with soft imperfect awns or awnless. *L. arvense* With.: *E. B.* t. 1125.

Corn-fields, not common in Scotland. 6. — The true natural distinction between this and *L. perenne* does not lie in the proportionate length of glumes and spikelets, which varies in both, but in the root without barren shoots, and in the tumid florets. The seeds, mixed with wheat and made into bread, have proved highly injurious. The name *Rye-grass* was originally (but is never now) given to this species, being the same as the French *ivroie*, from *ivre*, *drunk*, on account of the supposed effects of the seeds. The *L. arvense* of Withering can only be considered a var. of the present, with an imperfect awn.



40. *LEPTURUS* Brown. Hard-grass. (Tab. VIII. f. 37.)<sup>1</sup>

*Spike terete, solitary, separating at the joints. Spikelets solitary in each joint, imbedded in cavities alternately on opposite sides of the rachis and placed edgewise to it, with 1 (or 2) fertile florets and a superior minute rudimentary (sometimes obsolete) neuter one. Glumes (1 or) 2, collateral, on the opposite side from the rachis and covering the floret, cartilaginous, several-nerved. Glumellas of the fertile floret 2, scarious, awnless. — Name from λεπτος, slender, and ουρα, a tail; in allusion to the slender spikes.*

1. *L. incurvatus* Trin. (*Sea II.*); spike subulate, glumes 2. — *α.* spike curved. *Rottbællia* L.: *E. B. t.* 760: *Parn. Gr. t.* 2. — *β.* spike filiform nearly erect. *L. filiformis* Trin. *Rottbællia* Roth. *R. incurv. var. filiformis* Hook.: *Parn. Gr. t.* 3.

Sea-shores, but not common. Frequent on the Irish coast. — *β.* near Aberlady, Scotland, and probably elsewhere. ☉. 7. — *Plant* from 2—6 or 8 inches high, more or less curved, especially in the curious spike, but never so much so on our coast as on the shores of the Mediterranean, our usual plant being in that respect intermediate between the genuine *L. incurvatus* and *L. filiformis* of authors.

41. ΚΝΑΨΙΑ Smith. Knappia. (Tab. IX. f. 39.)<sup>2</sup>

*Spikelets very shortly stalked, solitary, arranged on two sides of the simple rachis and forming a simple unilateral spike-like raceme, 1-flowered, awnless. Glumes 2, opposite, truncated, nearly equal, rather longer than the floret, membranous, 1-nerved. Outer glumella hairy, membranaceous, jagged; inner narrower, sometimes wanting. Styles distinct. Stigmas filiform. — Named in honour of Mr. Knapp, an English botanist, author of a work on British grasses.*

1. *K. agrostidéa* Sm. (*early K.*). *E. B. t.* 1127: *Parn. Gr. t.* 73. *Agrostis minima* L.

Sandy pastures by the sea, rare. Essex, near the mouth of the Thames. Wales, and S. W. coast of Anglesea, frequent. Jersey. ☉.

<sup>1</sup> The polymorphous genus, *Rottbællia* of Linnæus, is now restricted by Brown and others to plants found chiefly in E. India and New Holland. *Photurus* Trin., associated with *Lepturus* by Kunth, seems to differ from it as widely as either do from *Rottbællia*; and perhaps, in a general system of Grasses, the British species ought also to be separated. Although for aiding the student we describe the spikelets as solitary with 2 glumes, this is not the case, the spikelets being actually in pairs in *Lepturus* (*Dipterma*) *incurvatus* and *filiformis*: the fertile one is sessile, having a single glume; the other which is pedicellate, is deduced to the mere pedicel resembling the glume of the sessile spikelet and is usually described as a second glume belonging to it. In the true species of *Lepturus* there is only one spikelet at each joint, and it is sessile and with one glume.

<sup>2</sup> The oldest name for this genus is certainly *Mibora*, but Adanson's names are not in much repute. *Chamaagrostis* Boik. is the next, but it has been usually rejected as the compound of another genus, it has, however, the sanction of DeCandolle and most German botanists: Smith's name is, on the other hand, retained by Brown, Sprengel, Trinius, and most English writers.

3, 4. — A beautiful and minute grass, of which only a solitary species is known. *Root* fibrous. *Stems* several from the same root. *Leaves* short, linear, rough, equalling in length their white inflated *sheaths*. *Glumes* 2, dorsally compressed, truncated, purplish. *Glumellas* sometimes 2, white, delicate, very hairy, jagged, the *outer one* much the largest and embracing the *inner*, which last is often wanting. Mr. Wilson finds no scale; nor does Trinius figure any. *Styles* long, filiform, hairy. *Fruit* beautifully dotted.

\*\* *Spikelets (with one perfect flower) arranged only on one side of the partial rachis and forming a racemose or digitate compound spike or raceme.* (Tab. IX. f. 42. g.) (Gen. 42—44.)

42. SPARTINA Willd. Cord-grass. (Tab. VIII. f. 38.)

*Spike* compound. *Partial spikes* erect, racemose. *Spikelets* sessile, awnless, arranged alternately in 2 rows on one side of the *partial rachis*, laterally compressed, with one *fertile* and scarcely any rudiments of a *neuter floret*. *Glumes* 2, very unequal, lanceolate, compressed. *Glumellas* 2, compressed, lanceolate, acuminate. *Styles* united half-way up. *Stigmas* elongated. — *Ligules very short*. — Name derived from its similarity to the *Lygeum Spartum*, or *Bastard mat-weed*, and that from σπάρτον, sometimes applied to a *broom*, sometimes to other plants, of which the bark, branches, and leaves are tough and made into cords, ropes, &c., called still in France, *spartes*. *Esparto* is a name given at the present day to *Stipa tenacissima* by the Spaniards.

1. *S. stricta* Sm. (*twin-spiked C.*); partial spikes 2—3, larger glume and outer glumella 1-nerved hairy, rachis scarcely produced beyond the terminal spikelet of each partial spike, leaves shorter than the spikes tapering at the base articulated upon the sheath lower ones deciduous. *Parn. Gr.* t. 74. *Dactylis stricta* E. B. t. 380.

Muddy salt-marshes, on the east and south-east coasts of England.  
4. 8. — A remarkably stiff rigid plant. *Stems* 6—8 inches, or a foot and more high. *Culms* concealed by the sheathing bases of the short pungent involute leaves. *Inner glumella* longer than the larger glume, which is a third longer than the smaller one.

2. *S. alterniflora* Loisel. (*many-spiked C.*); partial spikes numerous, larger glume 5-nerved fringed with a few distant short bristly hairs on the keel otherwise glabrous, outer glumella 3-nerved glabrous slightly toothed on the keel above, rachis much produced beyond the spikelets with a flexuose awn-like point, leaves equal to or longer than the spikes dilated at the base continuous with the sheath, and all persistent.

*E. B. S. t.* 2812: *Parn. Gr. t.* 75. *S. glabra* Muhl. *S. lævigata* Link.

Itchin Ferry, Southampton. 4. 8. — Inner *glumella* longer than the outer one, but shorter than the larger *glume*, which is 2—3 times longer than the smaller one. Much taller than the preceding, and a very distinct species, well characterized by Dr. Bromfield.

43. *CYNODON* Rich. Dog's-tooth Grass. (Tab. IX. f. 40.)

*Spikes* compound. *Partial spikes* spreading, digitate or racemose. *Spikelets* almost sessile, awnless, arranged in a single row on one side of the *partial rachis*, laterally compressed, with one fertile and a rudimentary neuter floret. *Glumes* 2, nearly equal, spreading. *Glumellas* 2, compressed, outer one boat-shaped, at length hardened and inclosing the *caryopsis*. *Styles* distinct. *Stigmas* oval. — *Ligules* none, except a tuft of hairs. — Named from *κυν*, a dog, and *οδον*, a tooth.

1. *C. Dactylon* Pers. (*creeping D.*); *partial spikes* 3—5 digitate, outer *glumella* longer than the *glumes*, glabrous on the sides somewhat ciliated on the keel and margins, leaves downy beneath, stem creeping at the base. *E. B. t.* 850: *Parn. Gr. t.* 72.

On the sandy sea-shore, rare. Cornwall, near Penzance; Studland, Dorset; Devonshire. 4. 7, 8. — *Culms* 4—6 inches high. *Leaves* on the barren shoots flat and spreading, on the stems usually folded. *Ligule* a tuft of a few hairs. *Spikelets* purplish. *Neuter floret* at the base of the inner *glumella*, a mere beardless bristle thickened at the end, more than half the length of the *glumellas*.

44. *DIGITARIA* Scop. Finger-grass. (Tab. IX. f. 41.)

*Spikes* compound. *Partial spikes* somewhat digitate. *Spikelets* in pairs on short unequal pedicels, arranged on one side of the *partial rachis*, awnless, flat in front, rounded on the back, with one perfect flower, and one barren or neuter in front. *Glumes* 2, lower one much smaller or obsolete. *Barren or neuter floret* as large as the fertile one, with 1—2 *glumellas*; outer *glumella* resembling the upper *glume*. Outer *glumella* of the upper or fertile floret convex, embracing the inner one, at length hardened and inclosing the *caryopsis*. *Styles* 2, distinct. — Named from *digitus*, a finger.

1. *D. \*sanguinalis* Scop. (*hairy F.*); culm creeping at the base, sheaths tuberculate and leaves hairy, stipules membranaceous, *partial spikes* 3—5 digitate or closely corymbose naked spreading, *partial rachis* flexuose serrulate on the margin, *spikelets* oblong-lanceolate slightly imbricated, lower *glume* minute ovate acute nerveless, upper lanceolate about half as long and broad as the floret 3-nerved almost glabrous, neuter *glumella*

5-nerved glabrous or slightly pubescent on the margin. *Parn. Gr. t. 70.* *Panicum L. : E. B. t. 849.*

Rare, in sandy cultivated fields; it formerly grew in Battersea fields, near London. Other habitats, given in the British Floras for this species, belong, in Mr. Borrer's opinion, to the next. ☉. 7, 8. — From a span to a foot high, branched at the base, erect or ascending. *Leaves* and *sheaths* hairy, the latter with small tubercles from which the hairs spring. *Spikes* 3—5, digitated. *Spikelets* secund, 2 together, appressed to the flattened rachis.

2. *D. \*humifusa Pers. (glabrous F.)*; culms depressed, sheaths and leaves glabrous, stipules membranaceous, partial spikes 2—4 somewhat digitate naked spreading, partial rachis nearly straight minutely serrulate on the margin, spikelets oblong somewhat separate, lower glume very minute truncated embracing the spikelet or (usually) wanting, upper glume oblong 3-nerved pubescent nearly as long as the fertile floret, glumella of the neuter floret 5-nerved pubescent. *E. B. S. t. 2613: Parn. Gr. t. 71.* *Syntherisma glabrum Schrad. Panicum Gaud. : Trin.*

Rare. On loose sand at Weybridge, Surrey; Ipswich; Norfolk; Suffolk; Sussex; and Yorkshire. ☉. 7, 8. — Generally smaller and more depressed than the preceding, of a purpler hue. *Leaves* and *sheaths* quite glabrous. Partial *spikes* usually fewer. *Spikelets* more ovate and more convex on the back. *Neuter glumella* purplish. *Richard* in *Pers. Syn.* appears to have been the first to discriminate this as a species; and *Schrader* has admirably described and figured the flower.

## CLASS III.

### ACOTYLEDONOUS<sup>1</sup>, OR CELLULAR, PLANTS.

Whole plant with a cellular structure (except in the true Ferns, which have tubular vessels among the cells, and hence approach the 2nd Class). There are no real flowers, nothing that can be considered as Stamen and Pistil. The Seeds, or organs of reproduction, are without any distinct embryo, consequently without any cotyledon. — This Class corresponds with the 24th, CRYPTOGRAMIA, in the Linnæan System.

<sup>1</sup> From α, *without*, and κοτυληδων, *a cotyledon*.  
B B 6

SUB-CLASS I. FILICES<sup>1</sup> Linn. (ORD. CVIII—CXIII.)  
(Tab. IX. f. 1—4, X., XI.)

*Fructification* generally of one, but sometimes of two kinds, consisting of *seeds* or *sporules*, included in *capsules*, *thecæ*, or *sporangia*, sometimes surrounded with an elastic ring, and these either naked or covered by a membrane, *indusium* or *involucre*; generally collected into clusters (*sori*), or spikes, situated at the back of the fronds, or marginal, terminal, axillary, or radical. — *Perennial* plants, of *varied structure*, bearing *fructification during a great part of the year*. In most, as in the true Ferns, the leaves are connate with the stem, so as to constitute fronds; in others, the leaves are distinct, as in LYCOPODIUM, which in general appearance comes nearest to the Mosses.

CONSPECTUS OF THE ORDERS.

108. POLYPODIACEÆ. Capsules dorsal or marginal, surrounded by a ring, reticulated and pellucid, opening transversely and irregularly. Fronds circinate in æstivation. Tab. ix. 1—4 and Tab. xi. f. 1.
109. OSMUNDACEÆ. Capsules clustered on the margin of a transformed frond, with an obscure ring, reticulated and pellucid, opening by two regular valves. Fronds circinate in æstivation. Tab. xi. f. 2.
110. ORPHIOGLOSSACEÆ. Capsules arranged on the margin of a contracted frond, sessile, without reticulation or a ring, coriaceous, opaque. Fronds straight in æstivation. Tab. xi. f. 3, 4.
111. LYCOPODIACEÆ. Fructifications sessile, in the axils of leaves or bractæas, capsules without a ring, 2—3-valved. Æstivation straight. Tab. xii. f. 1.
112. MARSALEACEÆ. Capsules without a ring, within involucre that are situated near the root of the plant. Tab. xii. f. 2, 3.
113. Equisetaceæ. Fructifications terminal in spikes or catkins, consisting of peltate polygonous scales on the under-side of which are from 4—7 involucre, which open longitudinally and contain numerous globose bodies enfolded by 4 filaments, clavate at their extremities. Tab. xii. f. 4.

<sup>1</sup> The Filices are here considered as a Subclass, and include the true Ferns, or Polypodiaceæ—no less readily distinguished by their general appearance than by the presence of an elastic ring to the capsule (Tab. ix. f. 1—4. Tab. x. and Tab. xi. f. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100).

easily recognized, and hence we have given brief, but we trust sufficient characters of them. However difficult the study of the Cryptogamia, or Acotyledonous plants in general, may be considered by the novice in botany, he will find, with the assistance of the figures here given, and the characters of the orders and genera, that the difficulties are as easily mastered as those attending the investigation of the flowering plants.

ORD. CVIII. POLYPODIACEÆ *R. Br.* (Tab. IX. f. 1—4, X. and XI. f. 1.)

*Capsules* dorsal or marginal, surrounded by a ring, reticulated and pellucid, opening transversely and irregularly. *Fronde* circinate in æstivation.

A. *Capsules opening transversely, placed on the back of the frond, but sometimes close to its margin; their ring vertical, usually incomplete.*

\* *Sori neither furnished with an involucre nor covered by the reflexed margin of the frond.*

1. CETERACH. Sori linear, on reticulated veins, covered with chaffy scales. Tab. ix. f. 1.

2. POLYPODIUM. Sori roundish. Veins simple or forked (in British species). Tab. ix. f. 2.

\*\* *Sori with an involucre, or covered by the reflexed margin of the frond.*

† *Sori roundish. Involucres placed upon the back of the lateral veins.*

3. WOODSIA. Sori roundish. Involucre below the sori, more or less cut at the margin. Veins forked. Tab. ix. f. 3.

4. ASPIDIUM. Sori roundish. Involucre above the sori, orbicular (*Polystichum*) or reniform (*Lastrea*). Veins forked (in British genera). Tab. ix. f. 4.

5. CYSTOPTERIS. Sori roundish. Involucre acuminate, cucullate at the base, attached below. Sorus on one side. Tab. x. f. 1.

†† *Sori oblong or linear. Involucres attached by the one side to the lateral veins, opening at the other.*

6. ASPLENIUM. Sori elongated (*Asplenium*) or oblong-reniform (*Athyrium*), arising from lateral veins, opening towards the midrib. Veins forked (in British species). Tab. x. f. 2.

7. SCOLOPENDRIUM. Sori elongated, straight. Involucre double, the two portions opening towards each other. Tab. x. f. 3.

††† *Sori marginal or parallel to the midrib, covered either by an involucre or by the reflexed margin of the frond.*

8. PTERIS. Sori continuous, at the margin of the frond. Involucre consisting of the reflexed margins. Tab. x. f. 4.

9. CRYPTOGRAMMA. Sori roundish at the margin of the frond, at length confluent and covered by the recurved margins meeting in the middle. Tab. x. f. 5.

10. BLECHNUM. Sori linear, parallel on each side of the midrib, distant from the margin. Tab. x. f. 6.

11. ADIANTUM. Sori oblong or roundish, marginal. Involucres formed of the reflexed margins or lobes of the frond and bearing the capsules. Tab. x. f. 7.

B. *Capsules opening irregularly, placed on a receptacle at the margin of the frond and terminating a vein; their ring horizontal.*

12. TRICHOMANES. Sori marginal. Involucre monophyllous, subcylindrical, surrounding a much elongated receptacle bearing the capsules. Tab. x. f. 8.

13. HYMENOPHYLLUM. Sori marginal. Involucre monophyllous, 2-valved, including an elongated receptacle bearing the capsules. Tab. xi. f. 1.

- A. Capsules opening transversely, placed on the back of the frond but sometimes close to its margin; their ring vertical, usually incomplete. Cellular tissue compact.<sup>1</sup> POLYPODIÆ. (Gen. 1—11.)

1. *CÉTÉRACH* Willd. *Ceterach*. (Tab. IX. f. 1.)

Sori oblong or linear, straight, scattered, arising from reticulated veins, covered (as is the whole back of the frond) with chaffy scales. *Involucre* none (or obsolete).—Name: supposed to be the *C'hetherak* of the Arabians.

1. *C. officinarum* Willd. (*common C*); fronds pinnatifid covered beneath with imbricated chaffy scales, segments ovate obtuse, scales entire. *Grammitis Ceterach* Sw. *Scolopendrium E. B. t.* 1244. *Asplenium L.*

Rocks and walls, most abundant in limestone countries, and the south of England and Ireland. Rare in Scotland; near Perth, Paisley, and Glasgow; walls about Drumlanrig, Dumfriesshire; Kilmannan, Argyshire.—Mr. W. Wilson finds evident traces of an involucre on the lower side of the sorus, viz. "a narrow membrane, fringed with the same chaffy scales which cover the back of the frond."

2. *POLYPODIUM* Linn. *Polypody*. (Tab. IX. f. 2.)

Sori roundish. *Involucre* 0.—Veins simple or forked (in the British species).—Named from *πολυς*, many, and *πους*, *ποδος*, a foot; from the numerous roots, or from the segments of the fronds.

1. *P. vulgare* (*common P*); fronds deeply pinnatifid, the segments linear-lanceolate obtuse crenulate approximate upper ones gradually smaller. *E. B. t.* 1149.

Rocks, walls, trunks of trees, and banks, frequent.—The lobes are sometimes deeply serrated and even pinnatifid or lacinated, as it has been found in Ireland and Wales, when it becomes the *P. Cambricum L.*

2. *P. Phegopteris L.* (*pale Mountain P*); fronds bipinnatifid the two lowermost pinnæ distinct pointing forward, their segments linear-lanceolate obtuse entire ciliated the lowermost ones adnate-decurrent, veins hairy, sori marginal. *E. B. t.* 2224.

Shaded rocky places, in mountainous countries.

<sup>1</sup> The compactness of the tissue arises, not only from the small size of the [cells], but also from there being several in the thickness of the frond, giving it a certain degree of opacity: in the next group (B.), the cellular tissue is lax and almost transparent, from the larger size of the cells, and there being often only one in the thickness of the frond, in this respect resembling the leaves of most Mosses, but differing from them by having the nerves and veins composed of that kind of vascular tissue called ducts, to which it were well to restrict the term *Angienchyma*.

3. *P. Dryopteris* L. (*tender three-branched P.*); fronds ternate bipinnate thin and membranaceous glabrous, divisions spreading and deflexed, the segments obtuse subcrenated, sori marginal, root-stock filiform. *E. B.* t. 616.

Dry stony places, in mountainous countries. Common in Scotland.

4. *P. calcáreum* Sm. (*rigid three-branched P.*); fronds ternate bipinnate rather rigid subpubescent and always minutely glandular beneath, divisions sometimes spreading and deflexed, segments obtuse somewhat crenated, masses of capsules crowded finally confluent. *E. B.* t. 1525.

Matlock baths, and other parts of Derbyshire, in broken limestone ground. Cheddar Cliffs; Coldwell Rocks, Herefordshire; Ingleborough, &c. — Distinguished from the preceding by its thicker and more rigid texture, its more pectinated subdivision, and by the minute pubescence covering the rachis and midrib of the pinnæ; but we consider it a very doubtful species.

### 3. Woodsia Br. Woodsia. (Tab. IX. f. 3.)

*Sori* scattered, roundish, having, beneath, an *involucre* which is cut at the edge into many, often capillary, segments. — Named in compliment to *Joseph Woods, Esq.*, author of an excellent "Monograph of the British Roses," "Tourist's Flora," &c.

1. *W. Ilvénis* Br. (*oblong W.*); fronds lanceolate pinnate, pinnæ deeply pinnatifid with many oblong segments chaffy beneath and on the rachis and stipes. *Hook.* in *E. B. S.* t. 2616. *Acrostichum L.*

Mountains, very rare. Wales. Near Caldron spout, Teesdale. Hills to the north of Moffatt. Clova mountains. — *Plant* small, 2—3 inches high.

2. *W. hyperborea* Br. (*round-leaved W.*); fronds lanceolate pinnate, pinnæ ovate-cordate inciso-pinnatifid hairy beneath, sori solitary at length confluent. *Polypodium Sw.*: *E. B.* t. 2023.

On Snowdon and Ben Lawers. Glen of the Dole, Clova: *Mr. Brand, Mr. Watson.* — About the same size as the preceding, but distinct, we believe, though of late we have seen specimens which it has been difficult to determine. *Mr. Babington* unites them.

### 4. Aspidium Sw. Shield-fern. (Tab. IX. f. 4.)

*Sori* roundish, scattered. *Involucre* above the sori orbicular, or reniform. — Veins simple or forked in the British species. — Name: *ασπίς, ασπίδος*, a shield, which its *involucres* resemble, especially in the species of the first division.



- \* *Involucres orbicular, fixed by the centre, hence peltate.* 'Aspidium Br. Polystichum Roth (in part). (Tab. IX. f. 4. a. b.)

1. *A. Lonchitis* Sw. (*rough Alpine S.*); fronds rigid linear-lanceolate pinnate, pinnæ lanceolate-falcate acute ciliato-seriate, the upper base acutely auricled the lower one cuneate, superior pinnæ bearing the fructifications, stipes chaffy. Polypod. L.: E. B. t. 797.: Polystichum Roth.

Shady clefts of rocks and under stones, on the high mountains of Wales and Scotland. — A very handsome northern fern.

2. *A. lobatum* Sw. (*close-leaved prickly S.*); fronds oblong-lanceolate bipinnate, pinnules rigid convex ovate sublunate acuminate aristate oblique and cuneated at the base and decurrent, the margins faintly serrated spinulose, with a distinct tooth at the base of the upper side, the one next the main rachis longer than the rest, stipes and rachis more or less chaffy, fructifications confined to the upper half of the fronds. E. B. t. 1563. *Polystichum aculeatum* Bab. —  $\beta$ . *lonchitoides*; small, the pinnules combined so as to form only a pinnate frond. Filix lonchitidi affinis Raii Syn. ed. 3, p. 121. *A. aculeatum*  $\beta$ . Sm.

Moist woods, shady banks, and rocky places.

3. *A. aculeatum* Sw. (*soft prickly S.*); fronds broadly lanceolate bipinnate, pinnules subrigid somewhat convex slightly petioled ovate-sublunate acuminate or acute aristate obliquely truncate and auricled at the base on the upper side, the one next the main rachis somewhat larger than the rest, the margins distinctly serrated and spinulose, stipes and rachis chaffy, fructifications copious. E. B. t. 1562 (bad). Polystichum Roth.

Woods and hedge-banks in England. Abundant in a hedge-bank near Henfield, Sussex.

4. *A. angulare* Willd. (*angular-leaved S.*); fronds broadly lanceolate bipinnate, pinnules thin and membranaceous plane petioled ovate sublunate obtuse aristate obliquely truncate at the base with a large auricle on the upper side, the margins deeply serrated spinulose, the lowermost ones often deeply pinatifid, that next the main rachis scarcely larger than the rest (excepting in var.  $\beta$ .), stipes and rachis very chaffy, fructifications copious. Sm. E. Fl. v. iv. p. 291; E. B. S. t. 2776. Polystichum Newm. *A. aculeatum*  $\beta$ . Sm.: Fl. Br. p. 1122. *A. lobatum* Willd. ? —  $\beta$ . subtripinnate, pinnules, especially the lower ones and the much larger one next the main rachis, distinctly pinnate.

Woods and hedge-banks, frequent in England, as far north as Yorkshire. N. Wales. Pease Bridge, Berwickshire. Colin Glen, Belfast. —  $\beta$ . with the last. — This has generally been considered *A. aculeatum* by British botanists, and has hence only been viewed in comparison with *A. lobatum* Sm., from which, at first sight, and in essential character, it certainly appears distinct; but after a most

careful examination of numerous specimens, we are compelled to say that there is a third kind, the *A. aculeatum* of *E. Fl.*, which does partake of the characters of the other two, and which some botanists refer to *A. lobatum*, and others as confidently to *A. aculeatum*. Hence it appears to us they must all be united, or, as done by Smith, they must constitute 3 species.

\*\* *Involucre orbicular-reniform, fixed by the sinus.* *Nephrodium Rich.* (in part), *Br. Lastrea Bory, Presl.* (Tab. IX. f. 4. c. d.)

5. *A. Oreópterus* Sw. (*Heath S.*); fronds pinnate, pinnæ lanceolate pinnatifid glabrous resinose-glandulose beneath the segments lanceolate obtuse entire, lowermost ones longer, sori marginal. *Polypodium Ehrh. : E. B. t. 1019.* *Lastrea Presl.*

Mountainous countries, in heaths and dry pastures. Abundant in Scotland. — *Involucres* small, indistinct.

6. *A. Thelypteris* Sw. (*Marsh S.*); fronds pinnate, pinnæ linear-lanceolate pinnatifid, and, as well as the rachis, slightly pubescent, the segments ovate acute entire, sori marginal contiguous at length confluent. *Polypodium L. : E. B. t. 1018.* *Lastrea Presl.*

Marshy and boggy places. — *Root* creeping.

7. *A. cristatum* Sw. (*crested S.*); fronds linear-lanceolate pinnate, pinnæ cordate attenuated deeply pinnatifid scarcely again pinnate, segments oblong-ovate obtuse acutely and doubly serrated. *E. B. t. 2125* (not t. 1949). *Lastrea Presl.*

Boggy heaths, very rare. Near Holt, Norfolk. Westleton, Suffolk. Caxton Bogs, Notts. Fritton, near Yarmouth. — A species most distinct from any of the following, even in the outline of its frond, which is narrowed below.

8. *A. Filix mas* Sw. (*blunt S.*); fronds bipinnate, pinnules oblong obtuse serrated, sori near the central nerve, stipes and rachis chaffy. *E. B. t. 1458* and t. 1949 (*A. cristatum*). *Lastrea Presl.*—*β. erosum*; pinnules less crowded more elongated and narrower inciso-dentate. *A. erosum Schkuhr Fil. t. 45.* *Lastrea Filix mas β. incisa H. Wats. in Herb. Hook.*

Woods and shady banks, frequent. — *β.* King's Cleft valley, near Bridgewater, Somerset: *Mr. Clark, 1837*; Mayford, Surrey: *Mr. Thomas Moore, 1848.*—A beautiful, though very common, fern, 3—4 feet high; its fronds growing in a circle. The var. *β.* has a peculiar aspect from the more distant and elongated pinnules, and is the *A. affine* of Fischer from the Caucasus and Lenkoran. *Mr. Borrer* finds a variety, common in Devonshire, with more copious and brighter-coloured scales on the stipes and rachis, and with a bright golden yellow tinge on the whole frond.

9. *A. rigidum* Sw. (*rigid S.*); fronds lanceolate bipinnate, pinnules narrow-oblong obtuse slightly pinnatifid, the segments broad and rounded bi-tridentate (without spinulose points to the teeth), stipes and rachis chaffy, involucre persistent very convex reniform entire. *Hook. in E. B. S. t. 2724.* *Lastrea Presl.*

On Ingleborough, Yorkshire; and on Wharncote, abundant. — Frond 1—2 feet long, pinnae very numerous, closely set, of nearly the same width throughout (often widest in the middle), with numerous rounded 2—3-toothed lobes, teeth broad and triangular. Involucre slightly glandular on the margin, with a reticulation quite unlike that of *A. spinulosum*. This plant differs from the following in having a permanent large convex and rounded involucre, resembling that of *A. F. mas*, covering the mass of capsules at every stage, with an attachment as truly central as that of *A. cristatum*. It agrees also with *F. mas* in the oblique insertion of the pinnae on the rachis, so that they lie in very different planes; but it differs essentially in not having the lower pinnae gradually diminished, the frond resembling in circumscription that of *A. cristatum*. In the shape of the pinnules and mode of toothings and subdivision it more resembles some states of *Asplen. Filix femina*: Mr. Wilson; to whom we are indebted for the specific character.

10. *A. spinulosum*<sup>1</sup> Willd. (prickly-toothed *S.*); fronds bi-

<sup>1</sup> On the *questio verata* of the differences, specific or otherwise, between *A. spinulosum* and what are here considered varieties, we have little to add, although we have not failed to reconsider the subject fully. No one has studied the Ferns with a candid and unbiassed mind, but must be satisfied that uniformity of opinion as regards the due limitation of their species is not to be looked for among botanists. In the present instance, we believe the conclusions to be drawn from a careful investigation of *A. spinulosum* and its allies would be as various as the individuals who examine them. One state of the plant, however, we are here desirous to notice, from the great discussion it has occasioned in some of the periodical journals, namely, *Aspidium dilatatum*, var. *recurvum*, of Bree in "Loud. Mag. of Nat. Hist.," vol. iv. p. 163. cum ic.: "*Lastrea recurva* of Mr. Newman, in "British Ferns," 1844. p. 226. We find no specific character in the latter work; but this deficiency is compensated by Mr. Babington, who ("Man of Brit. Botany," ed. 2. p. 411), under the name *Lastrea Fæniseeii*, thus distinguishes it: "*Frond triangularis bipinnata, pinnules pinnate or bipinnatifidæ segmentis serratis*

which has a very lax habit, with distant pinnules, and moreover (being stated to be "one-fourth of the nat. size," and, though folded, yet occupying the entire 8vo. page) must be a large plant, — nearly 4 feet high including the stipes. We have also a plant of Dr. Lippold's "Plant. Exsicc. of Madeira," marked "*Nephrodium Fæniseeii* n. Lowe Prodr.;" and probably Mr. Babington adopted the name from Dr. Lippold's specimens. These we are disposed to include under our var.  $\gamma$ . of *spinulosum*. But we have now to consider the *Nephrodium Fæniseeii* of Mr. Lowe himself: "N. fronde triangulari vel ovata, 3—4 pinnatifida, utrinque glabra: laciniis (tertiis 4-tique ordinis) oblongis, obtusis; ultimis incisim mucronato-serratis; omnium inferioribus exterioribus internis oppositis majoribus: soris numerosis distinctis: indusis primis semiovatis v. reniformibus, demum orbiculatis, emarginatis: stipite breviusculo, basi sparsim sub-palaceo, fusco, superne rachique pallidis" Lowe Prim. Faun. et Fl. Mad. &c. 1831. p. 7. — "Odor gratissimus, fœnum novum redolens, constans." Two varieties are constituted by *A. dilatatum* and *A. recurvum*: but the latter "status

tripinnate, pinnules oblong distinct inciso-pinnatifid, segments mucronate-serrate, stipes chaffy, involucre toothed evanescent. *A. dilatatum* Hook. Scot. ii. p. 154. —  $\alpha$ . fronds ovate or oblong, lower primary pinnae sub-bipinnate. *A. spinulosum* E. B. t. 1460: —  $\beta$ . fronds larger ovate, lower primary pinnae bi-tripinnate, pinnules often convex above. *A. dilatatum* Willd.: E. B. t. 1461. *A. dumetorum* Sm. *Polypodium dilatatum Hoffm.* *Lastrea Presl.* —  $\gamma$ . fronds triangular-ovate, pinnules generally concave above often minutely glandular. *A. dilatatum* var. *recurvum* Bree. *Lastrea recurva* Newm. *L. Fœnisæcii* Bab. *Nephrodium Fœnisæcii* Lowe? (in part). —  $\delta$ . pinnules and segments very unequal in size and in their spinulose serratures (a monstrosity?).

Moist woods, Alder-cars, and shady and rocky places, abundant. —  $\alpha$ . most frequent in rocky and subalpine countries. —  $\beta$ . generally in moist woods. —  $\gamma$ . Ireland, very common, Cornwall, Sussex, Cumberland (*Bree*). —  $\delta$ . Bingley Wood, near Halifax. About, Norwich. Glen Falloch, Scotland. — An extremely sportive plant, it must be confessed; but an attentive observer of nature will not find it difficult to trace the different states passing into each other, so that we cannot in our herbarium bring all our numerous specimens under the heads even of our own forms. The texture of the *frond*, too, is highly variable. It is the most compound of all our British *Aspidia*. In stony places on the Scottish mountains, especially the Braedalbane and Cairngorm ranges, the *frond* is almost ovate, but with nearly parallel sides, the whole compact in its ramification and loaded with fructifications.

### 5. CYSTOPTERIS *Bernhardi*. Bladder-fern. (Tab. X. f. 1.)

*Sori* roundish. *Involucre* inserted, by its broad cucullate base, at the under-side of the *sorus*, opening by a free, generally lengthened, extremity, which points towards the apex of the segment. — Veins *forked*. — Name: compounded of *κυστις*, a bladder, and *πτερις*, a fern.

do not find that we possess specimens thus named direct from Mr. Lowe: but, besides Dr. Lippold's specimens above-mentioned, we have both Mr. Lowe's varieties,  $\alpha$ . and  $\beta$ ., from Madeira, so marked by our valued friend Dr. Lemann; and there cannot be better authority for Mr. Lowe's plant. These unfortunately tell another tale; for the  $\alpha$ . is a very narrow-pinnuled form of *A. spinulosum*, having a long stipes with no scales, while the  $\beta$ . is a very common small form of *A. spinulosum*, and there is nothing in Mr. Lowe's characters at variance with these specimens. Whether Mr. Lowe had also Dr. Lippold's plant in view, it is impossible for us to say, but we think it is clearly that of Mr. Bree: that plant (Lippold's) retains its hay-like fragrance in the herbarium.

We find it needful to make one remark more on a plant of this group, described (but without any specific character) under the name of *Lastrea uliginosa*, by Mr. Newman, in "The Phytologist" for Oct. 1849, p. 678. It has been stated to have been "shown" to six eminent botanists, who have paid especial attention to Ferns. Their opinions stand recorded thus: 1. "A form of *Filix mas*." 2. "*Lastrea rigida*." 3. "*Lastrea cristata*." 4. "*Lastrea spinosa* Newm. a strong variety." 5. "*Lastrea dilatata*, a rigid variety." 6. "No way different from *Lastrea spinosa* Newm. I mean it would hardly pass for a var." — The plant under the name of *L. uliginosa*, in cultivation in the Royal Gardens, corresponds with our *A. spinulosum*,  $\alpha$ .

1. *C. fragilis* Bernh. (*brittle B.*); fronds broad lanceolate bipinnate, pinnae ovate or lanceolate variously toothed or lacinated or pinnatifid the segments more or less acute entire or again toothed, sori scattered more or less distant sometimes crowded and almost confluent, rachis winged. — *a. fragilis*; fronds decomposed pale green, sori rather large generally crowded, involucre usually acuminate conspicuous. *Cystea Sm. E. Fl. Cyathea E. B. t. 1587.* — *β. dentata*; fronds bipinnate, pinnae ovato-lanceolate, pinnules ovate-obtuse bluntly and unequally toothed rarely pinnatifid. *C. dentata Hook. Br. Fl. ed. 5. p. 441. Cyathea E. B. t. 1588. Cystea angustata Sm.: E. Fl. Pol. Rhæticum Dicks. Cyathea fragilis β. Sm.*

Rocks and walls, in the mountainous parts of G. Britain. — *β.* more abundant in England and Wales.

2. *C. alpina* Desv. (*lacinated B.*); fronds tripinnate, pinnules confluent ovate-oblong pinnatifid rather spreading, the segments broadly and shortly linear obtuse, with 2 or 3 blunt erect teeth, rachis winged. *Aspidium Sw. Cystea regia Sm.: E. Fl. (excl. the alpine stations). Cyathea incisa E. B. t. 163.*

On a wall (since destroyed) at Low Layton, Essex, plentiful. — Having received authentic specimens of the Layton plant from Mr. E. Forster, and compared them with Continental ones, and with figures and descriptions of *Aspidium alpinum* Sw., especially the plates of Jacquin and Schkuhr, we can, without hesitation, pronounce them identical.

3. *C. montana* Link; fronds triangular short on a long slender stipes tripinnate, pinnae and pinnules spreading, ultimate pinnules narrow-oblong inciso-dentate or pinnatifid, the segments toothed at the apex, rachis not winged, involucre subrotund very obtuse. *Hook. Sp. Fil. 1. p. 200. Aspidium Sw.: Schkh. Fil. t. 63.*

Braedalbane mountains, Ben Lawers, April 1836: *W. Wilson, Esq. Corrach-Uachdar, July, 1841: Messrs. W. Gourlie and W. Adamson.* — Well distinguished by its small, triangular, very compound fronds, and long stipes.

## 6. ASPLÉNIUM Linn. Spleenwort. (Tab. X. f. 2.)

*Sori* oblong or linear. *Involucre*s of the same shape, arising from the lateral veins and opening on one side longitudinally towards the central nerve or midrib. — *Veins* forked in the British species. — Name: *a*, *not*, and *σπλήν*, the *spleen*, the plant having been supposed useful in removing obstructions of the viscera.

1. *A. septentrionale* Hull (*forked S.*); fronds bifid, segments linear acutely lacinate-dentate. *E. B. t. 1017. Acrostichum L.*

Clefts of rocks, in mountainous parts of the north. Caernarvonshire. Near Llyn-y-Cwn, N. Wales. On Ingleborough and at Ambleside. Arthur's Seat, Edinburgh, plentiful. Stenton rock, Dunkeld.

2. *A. alternifolium* Wulf. (*alternate-leaved S.*); fronds pinnate, pinnæ alternate lanceolate-cuneate toothed at the apex lower ones trifid and toothed, involucre entire. *E. B. t. 2258.* *A. Germanicum Willd.*

Rocks, Scotland, very rare. Near Kelso; near Perth; Dunkeld: *Mr. Williamson*; 3 m. from Dunfermline. Said to have been found in Borrowdale; and at Llanrwst, North Wales; but possibly *A. septentrionale* or *A. Ruta muraria* has been taken for it.

3. *A. Rûta murâria* L. (*Wall-rue S.*); fronds bipinnate, especially below, pinnules obovate-cuneate lobed or bluntly toothed, involucre jagged at the margin. *E. B. t. 150.*

Walls and fissures of rocks, frequent. — More compound than the three following species, but with the habit of the two preceding.

4. *A. Trichómanes* L. (*common Wall S.*); fronds pinnate, pinnæ roundish-oblong obtuse crenated truncate-cuneate at the base (stipes and rachis black). *E. B. t. 576.*

Rocks and walls, common.

5. *A. viride* Huds. (*green S.*); fronds pinnated, pinnæ roundish-ovate obtusely serrated cuneate at the base (rachis green). *E. B. t. 2257.*

Moist rocks, N. of England, Wales, and Scotland. Frequent in the Highlands.

6. *A. marînum* L. (*Sea S.*); fronds pinnate, pinnæ oblong obtuse incise-serrate, the superior base rounded and sub-auriculated the inferior one truncated. *E. B. t. 392.*

In clefts and caves of rocks on the sea-coast; not unfrequent, especially in the North.

7. *A. lanceolátum* Huds. (*green lanceolate S.*); fronds lanceolate and bipinnate, pinnules obovate attenuated at the base deeply and sharply serrated those of the lower pinnæ somewhat lobed, principal rachis not winged, sori at length confluent. *E. B. t. 240.*

Rocks, very rare; in the south of England. Jersey, Cornwall, Tunbridge; on Adderbury Church, Oxfordshire (no longer found there); Barmouth. Stapleton, Bristol. Tremadoc and Pwllheli, N. Wales. — Allied to the following, but distinguishable by the above-mentioned characters.

8. *A. Adiántum nigrum* L. (*black-stalked S.*); fronds ovate or deltoid tripinnate below, pinnules ovate-lanceolate incispinnatifid toothed, principal rachis winged, sori at length confluent. *E. B. t. 1950.*

Banks and fissures of rocks, common. — *Stipes* purplish-black, as in the preceding species. A *var.*, with linear pinnules, is found by Mr. W. Wilson in Ireland, at Mucruss by Mr. Mackay.

9. *A. Filix fœmina* Bernh. (*short-fruited S.*); fronds broadly lanceolate bipinnate, pinnules linear-oblong acute often drooping incise-serrate, serratures bi-tridentate acute, lower one at the upper margin large auricled, sori oblong at length arched at the base. *Aspidium Sw.*: *E. B. t.* 1459 (*not good*). *Athyrium Roth.* *Aspidium irriguum E. B. t.* 2199. — *β. latifolium*; flaccid, pinnules crowded ovate, main rachis compressed, partial rachis winged. *Athyrium latifolium Bab. mst.*

Moist shady places, abundant. — *β.* near Keswick, Cumberland: *Miss Wright.* — The sori are shorter than in other British *Asplenias*, characteristic of *Athyrium Roth.* — Beautiful specimens of our *var. β.* we possess through the favour of the Honble. Miss Bickersteth, which she gathered in company with Miss Wright in the only locality yet known for it. Mr. Babington considers it a distinct species, and proposes to call it *Athyrium latifolium*: — we should probably have been of the same opinion, only that, among our numerous specimens of *A. Filix fœmina*, we find intermediate states, one from Awatschka Bay, Kamtschatka; another from Crete (Heldreich), "*Athyrium nov. sp.*" — This plant would appear to grow in very wet shady places, and to be altered in consequence. Mr. Newman gives a faithful representation of a curious monstrosity of *A. Filix fœmina* (*Brit. Ferns*, p. 248.) with very changed fronds, the main and partial rachis divided at the extremity in a corymbose manner: it retains its peculiarities in cultivation.

10. *A. fontānum* Br. (*smooth Rock S.*); fronds linear-lanceolate bipinnate, pinnules obovate-cuneate (small) with few large deep and sharp teeth, principal and partial rachis winged throughout. *Aspidium Sw.*: *E. B. t.* 2024. *A. Halleri Willd.* *Athyrium font. Presl.*

Walls and rocks, very rare, if not extinct. On Amersham or Agmondesham church, Bucks. Stony-place, Wybourn, Westmoreland; or Wiborn, Cumberland: *Hudson.* — A very distinct and handsome little species.

7. *SCOLOPÉNDRIUM Sw.* Hart's-Tongue. (Tab. X. f. 3.)

*Sori* linear, transverse, on lateral nerves. *Involucre* double, occupying both sides of the sorus, opening, as it were, by a longitudinal suture. — Veins *forked* — Named from the lines of fructification resembling the feet of a *Scolopendra*.

1. *S. vulgäre* Sym. (*common II.*); fronds simple oblong-ligulate acute heart-shaped at the base, stipes scaly. *E. B. t.* 1150. *S. officinarum Sw.* *Asplenium Scolopendrium L.*

Shady banks, cold and damp situations. — In the moat at Kenilworth Castle we have gathered this handsome fern more than 2 feet long.

## 8. PTERIS Linn. Brake. (Tab. X. f. 4.)

*Sori* continuous, linear, marginal. *Involucres* formed of the *reflexed* margin of the frond, frequently dilated into a membrane, opening internally.—Veins *forked* in the *British species*.—Name: πτερίς, in Greek, a *fern*; from πτερυξ, a *plume*, or *feather*.

1. *P. aquilina* L. (*common B.*); fronds tripartite, branches bipinnate, pinnules linear-lanceolate superior undivided inferior pinnatifid, the segments oblong obtuse. *E. B.* t. 1679.

Woods, heaths, and stony or sandy soils; abundant. This is the favourite haunt of the deer:—

“The wild buck bells (bellows) from ferny brake.”

It is employed for thatching houses, and as litter for cattle. The ashes are useful in the manufacture of soap and glass. Its astringent quality has recommended it for dressing and preparing kid and chamois leather, and the people in Scotland employ it as a vermifuge.

## 9. CRYPTOGRAMMA Br. Rock-brake. (Tab. X. f. 5.)

*Sori* at length confluent and marginal. *Involucre* formed by the revolute margins of the pinnules, which in a young state meet at the back: *partial* none. Veins *forked*.—Name: κρυπτος, *concealed*, and γραμμα, a *line*; from the concealed lines of capsules.

1. *C. crispa* Br. (*curled R.*); sterile fronds bipinnate, pinnules bi-tripinnatifid, segments linear-oblong often bidentate at the extremity, fertile fronds bipinnate tripinnate below, pinnules linear-oblong rather obtuse entire narrow at the base.—*Pteris crispa* L.: *E. B.* t. 1160. *Allosorus Bernh.*

Among loose stones in mountainous countries, in the north: more abundant in the north-west of England than in Scotland.—A very elegant Fern, properly distinguished by Mr. Brown from *Pteris*, differing in habit, even more than in generic character.

## 10. BLÉCHNUM Linn. Hard-fern. (Tab. X. f. 6.)

*Sori* linear, longitudinal, contiguous, parallel one on each side of the rib. *Involucre* continuous, opening interiorly.—Veins *forked*.—Name: βλήχνον, another Greek name for a *fern*.

1. *B. boréale* Sw. (*Northern II.*); sterile fronds pectinately pinnatifid the segments lanceolate rather obtuse, fertile fronds pinnate, pinnæ linear acuminate. *E. B.* t. 1159. *Lomaria Spicant Desv.*

Woods and heaths, abundant; especially in a poor light soil.—Mr. Brown (*Prodr.* p. 152) suggested that this plant might probably be referred to *Lomaria* (his *Stegania*), with which indeed it entirely agrees in habit, and other botanists have unhesitatingly placed it there. But if the young fertile fronds be examined, it will be evident that the involucre is by no means *marginal*; for there is a considerable space of frond between it and the margin.



11. *ADIANTUM* Linn. Maiden-hair. (Tab. X. f. 7.)

*Sori* oblong or roundish. *Involucres* membranaceous, arising from distinct portions of the margin of the frond, turned in, opening interiorly.—Veins *forked in the British species*.—Name: *ἀδίαυτος*, that which is of a dry nature.

1. *A. Capillus Veneris* L. (*true M.*); frond bipinnate, pinnules thin membranaceous obovate-cuneate inciso-sublobate, segments of the fertile pinnules terminated by a linear-oblong sorus, sterile ones serrated. *E. B. t.* 1564.

Moist rocks and walls, especially near the sea, rare. Near St. Ives, Barry Island and Port Kirig, Glamorgan. Ilfracombe. Between Douglas and Peel, Isle of Man. By the Carron, Kincardineshire. South isles of Arran, Galway, Ireland. — A most delicate and graceful fern, very abundant in the south of Europe, where we have seen it lining the inside of wells, as it does the basin of the fountain at Vaucluse, with a tapestry of the tenderest green.

*B. Capsules opening irregularly, placed on a receptacle at the margin of the frond and terminating a vein; the ring horizontal.*—Cellular tissue lax *TRICHOMANIDÆ*. (Gen. 12, 13.)

12. *TRICHOMANES* Linn. Bristle-fern. (Tab. X. f. 8.)

*Sori* marginal. *Capsules* upon an elongated receptacle, within a cylindrical, or suburceolate, monophyllous *involute*, which is of the same texture as the frond, opening above. Veins *forked*.—Name: an ancient Greek word, supposed, from the description of Dioscorides, to be applied to the *Asplenium Trichomanes* of Linnæus.

1. *T. radicans* Sw. (*rooting B.*); fronds 3—4-pinnatifid glabrous, segments linear entire or bifid obtuse, involucres solitary in the axils of the upper segments margined cylindrical, the mouth scarcely 2-lipped shorter than the receptacle. *T. brevisetum* Bor. *Hymenophyllum alatum* *E. B. t.* 1417. *Hymenophyllum Tunbridgense* *β. Fl. Brit.*

Wet rocks in mountainous countries, rare. Near Bingley, Yorkshire. Powerscourt, and near the cascade at the foot of Turk mountain, Killarney. Hermitage Glen, Wicklow.—This rare and beautiful Fern, together with the species of the following genus, have a habit very different from the rest of our ferns, and belong to a group which abounds in the tropics. Their fronds are membranous and elegantly reticulated, and their depressed sessile capsules have a jointed ring which completely surrounds them transversely, and they are fixed at a distance from the ring to the receptacle. For the numerous synonyms of this species, see *Hook. Sp. Fil.* i. p. 125.

## 13. HYMENOPHYLLUM Sm. Filmy-fern. (Tab. XI. f. 1.)

*Sori* marginal. *Capsules* upon a narrow receptacle, within a 2-valved *involute* which is of the same texture as the frond, opening above. — *Veins forked*. — Named from *υμην, υμηνος*, a *membrane*, and *φυλλον*, a *leaf*; an admirably characteristic appellation.

1. II. *Tunbridgense* Sm. (*Tunbridge F.*); fronds tender pinnate, pinnæ distichous vertical pinnatifid the segments linear undivided or bifid and as well as the axillary solitary suborbicular compressed involucre spinulose-serrate, rachis strongly winged. *E. B.* t. 162.

Moist rocks among moss, in mountainous countries. First found at Tunbridge. Abundant in the north-west of England and in Wales and many parts of Ireland. Banks of the Clyde. — Habit tender and delicate. *Pinnæ* pointing in two opposite directions, flat and vertical, on the same plane with the winged *rachis*. *Involucres* nearly orbicular, slightly swollen at the base, where the cluster of *capsules* is lodged, the rest compressed, especially at the margin of the valves. When dry, there is a degree of elasticity in the plant.

2. II. *Wilsoni* Hook. (*Scottish F.*); fronds rigid pinnate, pinnæ recurved subunilateral wedge-shaped and 4—6-lobed, the segments linear undivided or bifid spinulose-serrate, involucre axillary solitary ovate inflated entire, rachis only slightly margined towards the extremity. *Wils. in E. B. S.* t. 2686.

Wet rocks. North of England and Wales. High granite rock, near Bodmin, Cornwall. Abundant in the Highlands of Scotland and in many parts of Ireland. — More rigid, and with larger reticulations than the last: quite distinct in its mode of growth, for all the *pinnæ* are strongly curved backwards, in a direction contrary to that of the fructification: the *involute* is totally different, larger, browner, of a more rigid texture, truly ovate, each valve remarkably convex for its whole length, the edges only of the valves being applied to each other, and they are quite entire. — This is probably the *H. unilaterale* of Willd. *Sp. Pl.* 5. p. 521.; but we have seen no authentic specimen to confirm the opinion.

## ORD. CIX. OSMUNDACEÆ R. Br. (Tab. XI. f. 2.)

*Capsules* clustered on the margin of a transformed frond, with an obscure ring, reticulated and pellucid, opening by two regular valves. *Fronds* circinnate in æstivation.

I. OSMÚNDA Linn. Osmund-royal or Flowering-fern.  
(Tab. XI. f. 2.)

*Capsules* subglobose, pedicellate, clustered, striated, half 2-valved. *Involucre* none. — *Veins forked*. — Name: probably

given, as Sir J. E. Smith suggests, in honour of some person. *Osmund*, in Saxon, signifies *domestic peace*; from *os*, *house*, and *mund*, *peace*.

1. *O. regális* L. (*common O.*, or *Flowering-fern*); fronds bipinnate, pinnules oblong nearly entire the lower base somewhat auricled, the inferior ones opposite, fertile panicle bipinnate occupying the extremity of the frond. *E. B.* t. 209.

Boggy places, wet margins of woods; very frequent in the N. W. of Scotland, and S. of Ireland. — The noblest and most striking of our ferns. Mr. Stewart Murray measured a tuft of its fronds on the banks of the Clyde, which from the base, where they sprung from the ground, were 11½ feet high.

ORD. CX. OPHIOGLOSSACEÆ *R. Brown.* (Tab. XI. f. 3, 4.)

*Capsules* arranged on the margin of a contracted frond, sessile, without reticulations or a ring, coriaceous, opaque. *Fronds* straight in æstivation. (Gen. 15, 16.)

1. OPHIOGLOSSUM. Capsules connate on a 1-celled 2 ranked spike.
2. BOTRYCHUM. Capsules arranged on one side of a pinnated rachis.

1. OPHIOGLÓSSUM *Linn.* Adder's-tongue. (Tab. XI. f. 4.)

*Capsules* 1-celled, 2-valved, opening transversely, connate, forming a compact 2-ranked spike. *Involucre* none. — Veins *reticulated*. — Name, — *οφις*, *οφις*, a *serpent*, and *γλωσσα*, a *tongue*, which the spike of fructification somewhat resembles.

1. *O. vulgátum* L. (*common A.*); spike cauline, frond ovate obtuse. *E. B.* t. 108.

Moist pastures and in woods.

2. BOTRYCHUM *Sw.* Moonwort. (Tab. XI. f. 3.)

*Capsules* subglobose, sessile, clustered at the margin and on one side of a pinnated rachis, 1-celled, 2-valved, compressed, opening transversely. *Involucre* none. — Veins *forked*. — Name: *βοτρυς*, a *bunch of grapes*; from the appearance of the branched clusters of capsules.

1. *B. Lunária* *Sw.* (*common M.*); frond pinnated solitary, pinnæ lunate or subflabelliform crenate. *Osmunda* L.: *E. B.* t. 318.

Dry mountain pastures. — Varieties of this are found, with more than one frond upon a stalk, and with the pinnules lacinated and even pinnatifid. Captain Carmichael communicated specimens to us, which bore capsules on the margins of their lower pinnules.

ORD. CXI. LYCOPODIACEÆ Sw. (Tab. XII. f. 1.)

*Fructification* sessile, in the axils of leaves or bracteas. *Capsules* without a ring, 2—3-valved. *Æstivation* straight.

1. LYCORÓDIUM Linn. Club-moss. (Tab. XII. f. 1.)

*Capsules* 1-celled; some 2-valved, including a fine powdery substance (Tab. XII. f. 1. c, d, e.), others 3-valved, containing a few large *grains* or *seeds* (Tab. XII. f. 1. f, g, h.). — Named from *λυκος*, a *wolf*, and *πους*, *ποδος*, a *foot*, which the branches of some species are supposed to resemble.

1. *L. clavatum* L. (*common C.*); spikes in pairs cylindrical stalked, their scales ovate acuminate eroso-dentate, stem creeping, branches ascending, leaves scattered incurved and hair-pointed. *E. B.* t. 224.

Heathy pastures, especially in mountainous countries. — The *seeds*, being inflammable, are used to produce artificial lightning on the stage; and the *Poles* make a decoction of the plant to cure that terrible disease, the *plica polonica*. *Stems* many feet long.

2. *L. annötinum* L. (*interrupted C.*); spikes oblong-cylindrical solitary sessile terminal, stem creeping, branches ascending dichotomous, branchlets simple, leaves in about 5 rows linear-lanceolate mucronate serrulate patent. *E. B.* t. 1727.

Stony mountains of N. Wales, in Cumberland, and in the Highlands of Scotland. Not unfrequent on the Cairngorm range.

3. *L. inundatum* L. (*Marsh C.*); spikes terminal sessile leafy solitary, stem (short) creeping, branches simple few, leaves linear scattered acute curved upwards. *E. B.* t. 239.

Moist heathy places; but not very common.

4. *L. selaginóides* L. (*lesser alpine C.*); spikes terminal solitary sessile, stem creeping, branches few ascending simple, leaves scattered lanceolate subpatent ciliato-denticulate. *E. B.* t. 1148.

Boggy and springy spots, by the sides of mountains in the north; not unfrequent. Sandy coast of Lancashire and Anglesea.

5. *L. alptum* L. (*Savin-leaved C.*); spikes terminal solitary sessile short cylindrical, stem prostrate, branches dichotomous and fascicled, leaves in 4 rows oblong convex acute appressed. *E. B.* t. 234.

On the more elevated mountains of the north, frequent. — It is used in many countries to dye woollen cloth of a yellow colour.

6. *L. Selágo* L. (*Fir C.*); capsules in the axils of the common leaves (not spiked), stem dichotomously branched erect fasti-

giate, leaves in about 8 rows linear-lanceolate acuminate entire imbricated rigid. *E. B.* t. 233.

Heathy and stony soils, most abundant in mountainous countries. — Used in the Highlands, instead of alum, to fix colours in dyeing, also as an emetic or cathartic, but it operates violently. The Swedes employ it to destroy lice on swine and other animals.

## ORD. CXII. MARSILEACEÆ *R. Br.* (Tab. XII. f. 2. 3.)

*Capsules* without a ring, within *involucres* that are situated near the root of the plant. Aquatics.

1. *ISOËTES*. Involucres formed by the swollen bases of the leaves.
2. *PILULARIA*. Involucres arising, but distinct from, the base of the leaves.

### 1. *ISOËTES* *Linn.* Quill-wort. (Tab. XII. f. 2.)

*Involucres* formed by the swollen base of the leaves, 1-celled. *Seeds* or sporules of two kinds, inserted upon many filiform receptacles. — Named from *isos*, equal or alike, and *eros*, the year, or ever-green.

1. *I. lacustris* *L.* (*Europæan Q.*); leaves subulate bluntly 4-angular of 4 longitudinal internally jointed tubes. *E. B.* t. 1084.

Bottoms of lakes in the north of England, Wales, and Scotland. — A very singular aquatic; its *fructification* being entirely concealed at the base of the cellular subulate leaves. Mr. W. Wilson finds 2 *vars.* in Wales; the one densely tufted, with slender erect leaves; the other solitary, and with broader leaves widely spreading. May not the former be the *I. setacea* of Bosc?

### 2. *PILULARIA* *Linn.* Pill-wort. (Tab. XII. f. 3.)

*Involucres* solitary, nearly sessile, globose, coriaceous, 4-celled; each cell containing 2 different kinds of bodies, one a membrane containing many minute grains (f. 3. g.); the other a solitary grain or capsule (f. 3. h.). — Name: *pilula*, a little pill, which its fructifications resemble.

#### 1. *P. globulifera* *L.* (*creeping P.*). *E. B.* t. 521.

Margins of lakes and pools, and in places that are partially overflowed. — *Stems* creeping, long, and entangled. *Leaves* setaceous, erect, 2 or 3 from one point, 4—5 inches long. *Involucres* at the base of the leaves, about the size of small peas, brown, downy on the outside.

## ORD. CXIII. EQUISETACEÆ *De Cand.* (Tab. XII. f. 4.)

*Fructification* terminal in *spikes* or *catkins*, consisting of peltate polygonous scales, on the underside of which are from 4—7 *involucres*, which open longitudinally and contain numerous

globose bodies enfolded by 4 filaments clavate at their extremities.

1. *EQUISETUM* Linn. Horse-tail. (Tab. XII. f. 4.)

*Character* of the Genus the same as that of the Order.—Named from *equus*, a horse, and *seta*, a hair, or bristle; whence the English name *horse-tail*.

\* *Fertile stems unbranched, succulent, appearing before the sterile ones, which have whorled branches.*

1. *E. fluviatile* L. (in part) Sm. (*great Water H.*); sterile stems with very numerous (about 30) striæ and nearly erect simple branches, stem cylindrical smoothish, sheaths with close small subulate teeth, fertile stems (short) without branches clothed with ample loose sheaths having many subulate 2-ribbed teeth. *E. B. t.* 2022. *E. Telmateja* Ehrh.

Muddy lakes, sides of rivers and pools, frequent. *Fr.* April.—The largest of all our species, its *sterile stems* or *fronds* being 3—4 feet high.—We trust the name *fluviatile* may be preserved to this plant on the following grounds:—It is clear that under that appellation Linnæus intended to include the present fine species, for he expressly quotes—“*Equisetum caule non sulcato latissimo, verticillis densissimis*,” of Haller; and “*E. pulstre, longioribus setis*,” of Baulin; both quoted by Ehrhart himself under his *E. Telmateja*: we are, therefore, justified in saying this is Linnæus’s *E. fluviatile* “in part.” Allowing, therefore, that his Swiss and Lapland specimens are not identical with our *fluviatile*; yet seeing that they are the same as *E. limosum*, a name equally given by the illustrious Swede and, as we believe, universally adopted, we cannot conceive a rational objection to preserving it for the present plant.

2. *E. umbrósum* Willd. (*blunt-topped II.*); frond very obtuse at the extremity, sterile stem especially upwards scabrous with prominent points and about 20 striæ, teeth of the sheath appressed, branches simple patent, fertile stem without branches, its sheaths approximate appressed with subulate 1-ribbed teeth, the rib disappearing below the point. *C. Drummondi* Hook. *Br. Fl.* ed. 1.: and in *E. B. S. t.* 2777.

Scotland, rare; near Forfar, and banks of the Isla and Esk, in Forfarshire, extending up the valleys to their sources; by the Caledonian Canal; Campsie Glen; Bonnington woods, Lanarkshire; Woodcock Dale, Linlithgowshire. Near Belfast. *Fr.* April.—Allied to the following species, but unquestionably distinct. Its colour is greener and less glaucous; its *stems* rougher, with closely set raised points; its *angles* and *branches* much more numerous, and the whole *barren frond* is singularly blunt (in its outline) at the extremity, by which it may at once be known from *E. arvense*. The *sheaths*, though paler at the base, have blacker and more prominent ribs upwards, and they are so close as to imbricate each other: their *teeth* also are more numerous, when they separate into the proper number.

3. *E. arvense* L. (*Corn H.*); frond attenuated upwards, sterile stem slightly scabrous with 12—14 furrows, teeth of the sheath lanceolate-subulate 1-ribbed to the point, branches simple erecto-patent, fertile stem without branches, its sheaths remote loose. *E. B. t.* 2020.

Corn-fields and road-sides, frequent. *Fr.* April; afterwards the sterile stems appear.

\*\* *Fertile stems similar to the sterile ones, simple or branched.*

4. *E. sylvaticum* L. (*branched Wood H.*); sterile and fertile stems with about 12 furrows, branches compound wholly deflexed, sheaths lax with about 6 or 12 long membranaceous obtuse teeth, catkin terminal obtuse. *E. B. t.* 1874.

Moist woods, hedge-banks; abundant in the north. *Fr.* April, May. — A graceful species, less rigid and more herbaceous than any of the following. *Sterile plants* pyramidal in their outline; *fertile ones* abrupt at the top, especially after the fructification has passed away.

5. *E. limosum* L. (*smooth, naked H.*); stems smooth striated, striæ about 16—18, teeth of the sheaths short rigid distinct, branches nearly erect simple whorled often abortive, catkin terminal upon the stem. *E. B. t.* 929. *E. fluviatile* L. (in part).

Marshy watery places and ditches, frequent. *Fr.* June, July. — Next in size to *E. fluviatile*; but very different. It has fewer angles and teeth and fewer branches in a whorl, and these latter are often short and imperfect, or wanting; differing, too, by the catkins being upon stems that are similar to the barren ones.

6. *E. palustre* L. (*Marsh H.*); stems deeply furrowed roundish with 4—8 angles, teeth of the sheaths wedge-shaped acute brown at the point and membranaceous at the margin, branches simple whorled gradually shorter upwards (sometimes abortive), catkin terminal obtuse. — *α. vulgare*; stem with 6—8 furrows, branches barren, catkin terminal on the stem. *E. B. t.* 2021. — *β. alpinum*; much smaller, with 4—5 angles and teeth to the sheaths, upper branches abortive, catkin terminal on the stem. — *γ. polystachyon*; branches terminating in catkins. *Willd. : Raii Syn. p.* 131. *t.* 5. *f.* 3.

Boggy soils, frequent. — *β.* Boggy places near springs, on the higher parts of the Braedalbane mountains. — *γ.* Camberwell. *Fr.* June, July.

7. *E. Mackúyi* Newm. (*long-stemmed H.*); stems very long branched at the base, branches elongated flexuose simple or again irregularly branched towards the apex scabrous furrowed, sheaths at length wholly black with 6—13 narrow subulate teeth, catkins terminal mucronate. *Newm. Brit. Ferns. p.* 15. *cum Ic. E. elongatum Hook. Br. Fl. ed.* 5. and *Willd. ?*

Mountain glens, near Belfast: *F. Whittle, Esq.* and *Dr. Mackay*; since found in the north of Ireland, and in the bed of the river Dee, in Scotland. *Fr.* July. — The stems are nearly equally rough with the following, but the ramification is very different, as are the teeth of the sheaths. In the absence of any decided authority for this being the true *elongatum* of Willd. we are very willing to adopt Mr. Newman's name after our valued friend, and one of its discoverers in Ireland, Dr. Mackay. If, however, a really distinct species, it is very unlikely that it should not be found on the Continent, and already described there; and we are disposed to think it may prove the *E. ramosum* of Schleich. described by Koch, to which are also referred, by the latter author (*Fl. Germ. ed. 2. v. 2. p. 966.*), *E. elongatum* W., *E. Pannonicum* W., *E. ramosissimum* Desf., *E. procerum* Pollin., and *E. hyemale* var. *C. elongatum* Doll. Mr. Babington quotes under *E. Mackayi*, *E. trachyodon* (Braun) Koch?, because, we presume, Koch quotes Mr. Babington *E. Mackayi* with a doubt, under *E. trachyodon*. We cannot solve these doubts.

8. *E. hyemale* L. (*rough H.*); stems throwing up simple branches only from the base scabrous furrowed, sheaths black at the bottom and top otherwise whitish with about 14 slender often deciduous teeth (black at the extremity), catkin terminal mucronate. *E. B. t. 915.*

Boggy woods; principally in the middle and north of England; in Scotland and Ireland. *Fr.* July, Aug. — Most of the *Horse-tails* are more or less rough to the touch, and their cuticle abounds in *silex* or flinty earth, so that they are admirably suited for the polishing of hard woods, ivory, brass, &c. This species, *E. hyemale*, is by far the best kind for such purposes, and is imported largely from Holland under the name of *Dutch Rushes*. In Northumberland, Lightfoot tells us that the dairy-maids employ it to scour and clean their milk-pails.

9. *E. variegatum* Schleich. (*variegated rough H.*); stems filiform rough branched only at the base with 4—10 furrows, sheaths green below black above with white membranaceous obtuse bristle-pointed teeth (black at their base), catkin terminal mucronate. *E. B. t. 1987.*

Sandy sea-shores. Sands of Barrie. Near Liverpool; and at Mucruss, Ireland, growing in water. Salcombe Cliff, Devon: *Rer. R. Creswell*. Portmarnock sands, Ireland. *Fr.* July, Aug. — Usually decumbent, 6—8 inches long, slender. Mr. Babington considers his var. *β. arenarium* identical with the *variegatum* of *E. B.*, and he has a var. *γ. Wilsoni* (Newm.), “st. erect tall (3 feet), sheaths with a black ring at the summit; teeth short, obtuse.” This was found at Mucruss, by Mr. Wilson, growing in water, and has since been detected in the Dublin canal and on the banks of the Dec.

NOTE. — The remainder of the Orders of the Class CRYPTOGAMIA are given, with their Genera and Species, in the 5th volume of “*English Flora*” (or the 2d vol. of the former editions of the present work).



# SUPPLEMENT.<sup>1</sup>

(By DR. T. BELL SALTER.)

## RÚBUS Linn. Bramble. Blackberry. Raspberry.

(For the distinctive characters of this genus, vide sup. p. 119 : For a more detailed description of the various species and forms, vide "*Descriptive Table of British Brambles*, by T. Bell Salter, M.D., F.L.S." in the Botanical Gazette for May, 1850, vol. ii. pp. 113—131. The barren stem and terminal leaflet are those which are described, unless it be otherwise expressed.)

\* *Stem shrubby, erect, biennial.*

Group i. SUBERECTI Lindl. *Stem upright, biennial, leaves pinnate or digitate.* (Fruit variable in colour.)

1. *R. idæus* L. (*common R.*); stem prickly-setose, leaves pinnate, leaflets tomentose beneath, flowers drooping, petals erect. *E. B. t.* 2442. —  $\beta$ . *trifolius*; stem shining, leaves ternate. —  $\gamma$ . *Leesii*; leaflets 3, sessile, overlapping. *R. idæus*  $\gamma$ . *Leesii* Bub.

Thickets and moist heaths, frequent;  $\beta$ . less common;  $\gamma$ . rare. 5, 6. — *Leaflets* 3–7, white beneath. *Fruit* very pulpy, usually scarlet, rarely amber-coloured. *Prickly setæ* usually dark red, pale in the plants bearing amber-coloured fruit. *Plant* spreading by suckers.

2. *R. suberectus* And. (*red-fruited Br.*); stem without hairs or setæ round, prickles straight small few or many, leaves pinnate or digitate, leaflets cordate acuminate, flowers erect, petals spreading slightly exceeding the calyx. *E. B. t.* 2372. —  $\beta$ . *trifolius*; prickles few, leaves ternate.

Boggy heaths and wet places, chiefly in the north, not frequent;  $\beta$ . rare. 6, 7. — *Panicle* mostly branched. *Petals* white. *Fruit* red, soon dying. *Leaflets* 3–9, glabrous on both sides, pale green. This species and the following increase abundantly by seed.

3. *R. plicatus* W. and N. (*upright Bl.*); stem angular without hairs or setæ, prickles few curved, leaves quinate, leaflets mostly ovate plicate, flowers erect, petals spreading, twice as long as the calyx. *W. and N.* : *E. B. S. t.* 2714. —  $\beta$ . *carinatus*, leaflets lanceolate, carinated.

<sup>1</sup> We are happy to find space here to insert the views of our valued friend, Dr. Bell Salter, on the British *Rubi*. Our readers, however, will no doubt regret that, for the sake of conciseness, no character has been given of the species, which shall suffice to include all the forms under it, but only of what we presume to be the common state of the plant in this country.

Moist heaths and hoggly places, not rare;  $\beta$ . rare. 5, 6. — *Panicle* usually simple, racemose, with long pedicels. *Petals* white or pale pink. *Fruit* scarcely black. *Leaflets* dark green above, pale beneath.

(See 4 *R. rhamnifolius*  $\beta$ .)

\*\* *Stem shrubby arched or procumbent, perennial, rooting at the end.*

† *Stem destitute of setae.*

Group ii. CORYLIFOLII Lindl. *Stem polished, glabrous or slightly hairy; hairs patent, translucent; leaves digitate quinate; leaflets pubescent on both sides, pliant.* (Fruit black in this and the four following groups.)

a. *Calyx reflected from the fruit.*

4. *R. rhamnifolius* W. and N.? (*Buckthorn-leaved Br. or Bl.*); stem angled, prickles equal, lower pair of leaflets small directed backwards, panicle branched. *Borr.*: *W. and N.*? —  $\alpha$ . *cordifolius*; stem decumbent, leaflets cordate. *R. cordifolius* *W. and N.*? —  $\beta$ . *nitidus*; stem suberect, panicle leafy, spreading. *R. nitidus* *W. and N.* —  $\gamma$ . *sylvaticus*; stem villous, prickles numerous. *R. sylvaticus* *W. and N.* *R. villicaulis* *W. and N.*

Hedges and thickets, frequent. 5, 6. — A variable plant;  $\beta$ . has much the habit of *R. plicatus*, it is, however, distinctly osculant with  $\alpha$  and  $\gamma$ . *Stem* green. *Petals* white or pale pink.

5. *R. macrophyllus* W. and N.? (*large-leaved B.*); stem furrowed, slightly hairy, prickles equal few mostly small, leaflets elliptic-acuminate very pliant. *E. B. S. t.* 2625. *W. and N.*? —  $\beta$ . *Schlechtendalii*; prickles somewhat stronger: *Bab.* *R. Schlechtendalii* *W. and N.*?

Woods and thickets frequent. 6, 7. — Whole plant pale, closely allied to the preceding. *Petals* usually small and white; in  $\beta$ . larger and somewhat pink.

6. *R. corylifolius* Sm. (*Hazel-leaved B.*); stem glabrous often glaucous, prickles unequal, leaflets cordate mostly rugose, lower pair sessile overlapping. —  $\beta$ . *fastigiatus*; leaflets flat. *R. fastigiatus* *Bab.* —  $\gamma$ . *Smithii*; panicle cymose prickly and glandular. *Leighton.* *R. corylifolius* *E. B. t.* 827. —  $\delta$ . *incurvatus*; panicle narrow prickly and glandular. *R. incurvatus* *Bab.*

Hedges and thickets, common;  $\beta$ . unfrequent;  $\delta$ . rare, Llanberis, *Mr. Babington.* 5, 6. — *Stem* decumbent, green or tinted purplish. *Leaflets* often crisped. *Petals* small, mostly white.

(See, — with hairy stems, 8. *R. carpinifolius*  $\beta$ . and 12. *R. leucostachys*  $\beta$ .; — with glabrous stems, 10. *R. discolor*  $\beta$ ., 20. *R. Wahlbergii*  $\beta$ . and 22. *R. cæsius*  $\gamma$ .)

b. *Calyx embracing the fruit.*

7. *R. Saltéri* *Bab.* (*Bell Salter's B.*); stem angled slightly hairy, prickles small, leaflets elliptic acute, panicle compound. *Bab.* —  $\beta$ . *Balfourianus*; panicle corymbose. *R. Balfourianus* *Bab.*

Woods, rare. 6. — Whole plant pale green, spreading abundantly by creeping stolons, as well as rooting at the end of the stems. *Petals* small, white.

(See 9. *R. Sprengelii*  $\gamma$ .)

Group iii. **CARPINIFOLIÆ.** *Stem clothed with patent translucent hairs, and numerous uncinatè prickles; leaves pedate-quinatè or ternatè, leaflets carinatèd, their surfaces nearly glabrous and concoloratè, strongly veined beneath; panicle subtomentose.*

8. *R. carpinifolius* W. and N. (*Hornbeam-leaved B.*); stem arched angular, prickles with broad bases mostly confined to the angles of the stem, panicle branched, calyx reflexed. *W. and N.*: *E. B. S.* t. 2664. —  $\beta$ . *roseus*; stem but little hairy, panicle with a few setæ. *W. and N.* —  $\gamma$ . *corymbosus*; panicle corymbose prickly, terminal flower subsessile.

Thickets in a sandy soil;  $\beta$ . in woods. 6—9. Plant bright green. *Petals* mostly light pink; in  $\beta$  bright rose-coloured. After the first panicles pass out of flower, lateral ones continue to form till the close of autumn.

9. *R. Sprengelii* W (*Sprengel's B.*); stem prostrate round prickly on all sides with slender hooked prickles, panicle corymbose, calyx embracing the fruit. —  $\alpha$ . *Borreri*; prickles numerous, leaves pedate-quinatè. *R. Borreri* *Bell Salter* olim: *Bab.* —  $\beta$ . *Wilsoni*; plant bearing a few setæ. *R. Borreri*  $\beta$ . *Wilsoni* *Bell Salter* olim: *Bab.* —  $\gamma$ . *Weikel*; stem slender, prickles fewer, leaves ternatè, panicle lax few-flowered. *R. Sprengelii* *W. and N.*

Heaths and open places, not frequent;  $\gamma$ . in woods. 6, 7. — *Stem* prostrate, often concealed. *Panicles* upright, often appearing to spring from the ground, especially in  $\gamma$ . *Flowers* pale in  $\alpha$ . and  $\beta$ ., bright rose-coloured in  $\gamma$ .

Group iv. **TOMENTOSÆ.** *Stem angled, more or less silky with divaricating opaque hairs; prickles silky at the base, mostly confined to the angles of the stem, often in pairs; leaves digitatè; leaflets polished above, hoary beneath; panicle tomentose.*

10. *R. discolor* W. and N. (*common B.*); stem arched furrowed subglaucous with minute silky hairs, prickles mostly uncinatè, leaves quinatè, leaflets elliptic crenatè-serratè usually decurved at the margin. *Lindl.* *R. fruticosus* *E. B.* t. 715. —  $\beta$ . *thyrsoides*; silky pubescence obsolete, tomentum of the panicle short. *R. thyrsoides* *Wimn.* ? *R. fruticosus* *W. and N.* ? —  $\gamma$ . *macroacanthus*; prickles very large, tomentum of the panicle loose. *R. discolor* *W. and N.*

Hedges, woods, and heaths, common. 6—8. — *Stem* dark. The petals vary from pure white to a full deep red. *Leaflets* generally 5, less decurved in plants growing in the shade.

11. *R. argenteus* W. et N. (*Silvery B.*); stem pubescent tomentose, prickles numerous uncinatè slender, leaves quinatè, leaflets obovatè cuspidatè doubly serratè pubescent tomentose beneath. *W. et N.* —  $\beta$ . *macroacanthus*; prickles large pungent. *R. macroacanthus* *W. and N.* —  $\gamma$ . *tenuis*; stem slender, panicle with lower branches attenuatè. *R. discolor* var. *argenteus* *Bell Salter* olim: *Bab.*

Thickets and hedges, not frequent. 7, 8. — Nearly allied to the preceding, and following species. *Silky pubescence* more abundant and less close than in the preceding, and glittering white. *Petals* pink.

12. *R. leucostachys* Sm. (*Downy-spiked B.*); stem tomentose, prickles straight, leaves quinatè, leaflets acuminate unequally and doubly serratè. —  $\alpha$ . leaves elliptic coriaceous, serratures acute. *R.*

leucostachys Sm. : *E. B. S. t.* 2631.—*β. vestitus*; prickles weak, leaflets orbicular flaccid scarcely hairy beneath, tomentose clothing loose. *R. vestitus W. and N. ? R. vulgaris W. et N.*—*γ. argenteus*; tomentose clothing very close, otherwise like *α*.

Common. *α.* and *γ.* in hedges, and *β.* in woods. 7, 8.—A variable plant, *β.* being so altered by the effect of shade as to be often taken for a different species. *Stems* dark purple in *α.* and *γ.*, green in *β.* *Leaflets* coriaceous in *α.* and *γ.*, flaccid in *β.* *Petals* white or pink.

(See 14 *R. rudis* *δ.* and 16 *R. Koehleri* *ε.*)

†† *Stem setose.*

Group v. *RADULÆ.* *Stem armed with prickles, aciculi, hairs, and setæ on all sides; leaves quinate; leaflets obovate cuspidate acuminate, all stalked; calyx reflexed from the fruit; fruit of many drupes shining.*

13. *R. Rûdulu W. (File-stemmed B.)*; stem striated, prickles unequal passing by gradation into aciculi or setæ, leaflets finely serrated pubescent and strongly nerved beneath, panicle pubescent-tomentose, sparingly prickly, sepals ovate tomentose. *W. and N. : Lindl.*—*β. Hystrix*; glands and setæ fewer, leaves less nerved beneath. *R. Hystrix W. et N.*—*γ. pygmaeus*; stem and prickles slender.—*δ. foliosus*; panicle leafy to the top. *R. foliosus W. and N.*—*ε. Lingua*; transition from prickles to setæ less gradual, panicle spreading, sepals pointed. *R. Lingua W. and N.* *R. scaber Bab.*

Hedges and thickets, mostly in the south, on a sandy soil, not frequent; *γ.* and *δ.* rare. 7, 8.—Whole plant pale green. *Sepals* very tomentose, without setæ or leaf-point. *Petals* pink.

14. *R. rudis W. (rough B.)*; stem angular, prickles equal mostly confined to the angles of the stem, hairs, setæ and aciculi equal, leaflets doubly and coarsely serrated prickly beneath, panicle hairy, with long prickles and setæ, sepals lanceolate leafy pointed prickly and setose. *W. et N. : Lindl.*—*β. Leightoni*; prickles of the panicle uncinatè. *R. Leightoni Lees : Leighton.*—*γ. foliosus*; plant smaller, panicle leafy to the top.—*δ. Reichenbachii*; aciculi and setæ few. *R. Reichenbachii W. et N.*

Margins of copses in a stiff soil, frequent; *γ.* rare, near Swapstone, *Rev. A. Blorum.* 6, 7.—*Stem* dark fuscous, in *β.* inclining to green. *Prickles* long, not passing by gradation into aciculi and setæ. *Leaflets* jagged, dark green. *Panicle* large, and long. *Petals* small, white,

Group vi. *KOEHLERIANI.* *Stem armed with numerous prickles, aciculi and setæ on all sides; leaves ternate or quinate, if quinate the lower pair of leaflets sessile. Fruit of many drupes, shining.*

*a. Calyx reflected from the fruit.*

15. *R. Günthéri W. (Günther's B.)*; stem decumbent angular hispid with unequal prickles and aciculi, hairs and setæ few, leaves 3—5-nate, leaflets obovate-cuspidate nearly glabrous on both sides doubly crenate-dentate, sepals ovate-lanceolate cuspidate hairy. *W. and N. : Bab.* *R. thyrsiflorus W. and N.*—*β. pyramidalis*; leaflets decurved, sepals prickly. *Bab.*—*γ. Babingtonii*, stem furrowed, angles rounded. *R. Babingtonii Bell Salter olim.*—*δ. Blozamii*;

branches of the panicle short corymbose. *R. Bahingtonii*  $\beta$  Blosamii *Bell Salter* olim: *Bab.*

Thickets, rare. 7, 8. — *Panicle* often extremely large and branched, the branches themselves forming large panicles. *Flowers* and *fruit* small. *Petals* white.

16. *R. Koehleri* W. (*Koehler's B.*); stem hairy setose with numerous broad-based prickles and aciculi, leaves pedate-quinate, leaflets ovate-acuminate pubescent and prickly beneath, sepals lanceolate setose and prickly. *E. B. S. t.* 2605. —  $\beta$ . *apiculatus*; stem procumbent, hairs and setae not numerous. *R. apiculatus* W. et N. —  $\gamma$ . *foliosus*; plant very prickly, panicle leafy to the top. *R. Koehleri* W. et N. —  $\delta$ . *fusco-ater*; leaflets rotund-ovate finely serrated, lower pair overlapping. *Borr.* *R. fusco-ater* W. et N. —  $\epsilon$ . *fuscus*; prickles mostly confined to the angles of the stem. *Bab.* *R. fuscus* W. et N.

Woods and thickets. 7, 8. — *Stem* very prickly, purplish green. *Leaves* glossy, soft beneath. *Panicle* variable, often much branched. *Petals* white or pale pink.

17. *R. humifusus* W. (*trailing B.*); stem procumbent, prickles and aciculi numerous slender often gland-tipped, leaves ternate or pedate-quinate, leaflets cordate acuminate doubly and unequally serrated, branches of the panicle appressed thickly clothed with setae aciculi and slender gland-tipped prickles, sepals lanceolate setose prickly. W. et N.: *Bab.*

Woods and thickets, very rare. 6, 7. — *Plant* light green, creeping, with upright panicles growing apparently from the earth; well distinguished by this mode of growth, and its needle-like gland-tipped prickles. *Petals* white.

(See 8. *R. carpinifolius*  $\beta$ .)

#### b. *Calyx* patent after flowering.

18. *R. hirtus* Waldst. et Kit. (*hairy B.*); stem procumbent, setose and very hairy, prickles and aciculi horizontal, leaves 3—5-nate, leaflets ovate-cordate unequally serrated soft and pubescent, panicle setose and hairy. W. and N. — " $\beta$ . *Menkei*; leaves moderate 5- or 3-nate, leaflets oval lanceolate, panicle hairy, calyx prickly." *Bab.*

Thickets, rare. " $\beta$ . near Tonbridge Wells: *Mr. Borrer.*" 7, 8. — *Plant* with the habit of the last species. When the leaves are ternate, the leaflets are lobed as in *R. cæsius*. *Petals* small, white.

19. *R. glandulosus* Bellardi (*glandulose or Bellardi's B.*); stem hairy, setose, prickles unequal, leaves mostly ternate, leaflets oval cuspidate strongly veined beneath, panicle bracts and sepals very setose. —  $\alpha$ . *Bellardi*; stem round, prickles small, setae abundant, leaflets finely and equally serrated. *R. glandulosus* *Borr.*: *E. B. S. t.* 2883. *R. Bellardi* W. and N. —  $\beta$ . *Lejeunii*; plant less setose, leaves unequally serrated. *R. Lejeunii* W. and N. —  $\gamma$ . *rosaceus*; stem angular, larger prickles uncinat, leaflets coarsely serrated. *R. rosaceus* W. and N. —  $\delta$ . *pallidus*; leaflets usually 5 narrow. *R. pallidus* W. and N. ?

Woods and thickets, not frequent. 7—9. — *Stems* reddish green. *Leaflets* pale green above, tawny-pale with pink veins beneath. *Inflorescence* with a mossy covering of red glands and setae. *Sepals* often leaf-pointed. *Petals* rose-coloured.

(See 9. *R. Sprengelii*  $\beta$ .)

Group vii. *Cæsius* Lindl. *Stems* glaucous with few hairs and setae; *fruit* of few drupes, glaucous. (*Fruit* blue or bluish.)

20. *R. Whailbrigé* Arrh. (*Wahlberg's Dewberry* or *B.*); stem with

a few hairs and glands and numerous thick-based prickles, leaves pedate-quinate, leaflets overlapping pubescent rugose, panicle leafy tomentose with numerous falcate prickles, sepals patent ovate tomentose and glandular. — *β. glabratus*; plant nearly without setæ. *R. Grabowskii Weihe ? Bab.*

Hedges, rare. 6, 7. — *Stem* very prickly, pinkish-green. *Leaflets* thick and soft, light green above, pubescent and pale beneath. *Panicle* large. *Petals* bright rose-coloured. *Fruit* often abortive and, according to Bloxain, "remarkably hairy."

21. *R. nemorósus* Hayne (*larger Dewberry*); stem procumbent, leaves quinate, leaflets ovate-cordate acuminate pubescent overlapping, calyx setose, sepals ovate acute. *Bab.* *R. dumetorum W. et N.*; *Lindl.* *R. cæsius β. Borr.*

Thickets, not unfrequent. 6, 7. — Intermediate between *R. Wahlbergii* and *R. cæsius*, from the latter of which, though scarcely distinct, it is distinguished by the quinate leaves. *Petals* rose-coloured. *Fruit* glaucous, black.

22. *R. cæsius* L. (*Dewberry*); stem weak, prickles unequal passing by gradation into hairs and setæ, leaves ternate, leaflets oval acuminate, lateral pair lobed externally, calyx setose, sepals ovate lanceolate cuspidate. *E. B. t.* 826; *W. and N.* — *β. pseudo-cæsius*; leaflets all lobed, fruit mostly abortive. *W. and N.* — *γ. tenuis*; nearly destitute of hairs and setæ. *R. tenuis* *Bell Salter olim, Bab.* — *δ. ferox*; prickles strong uncinat. *R. tenuis β. ferox* *Bell Salter olim.*

Hedges and sides of streams, common. 6—9. — *Stem* purplish-green. *Leaflets* light green and soft. *Sepals* often leaf-pointed. *Petals* white or pale pink. *Fruit* glaucous, often blue.

\*\*\* *Stem herbaceous, annual.*

Group viii. HERBACEI Wimm. et Grab. *Stems herbaceous, annual; flowering-stems growing from the crown of the root.*

23. *R. saxatilis* L. — 24. *R. árticus* L. — 25. *R. Chamæmórus* L. (For descriptions of these three species, vide sup. p. 121.)

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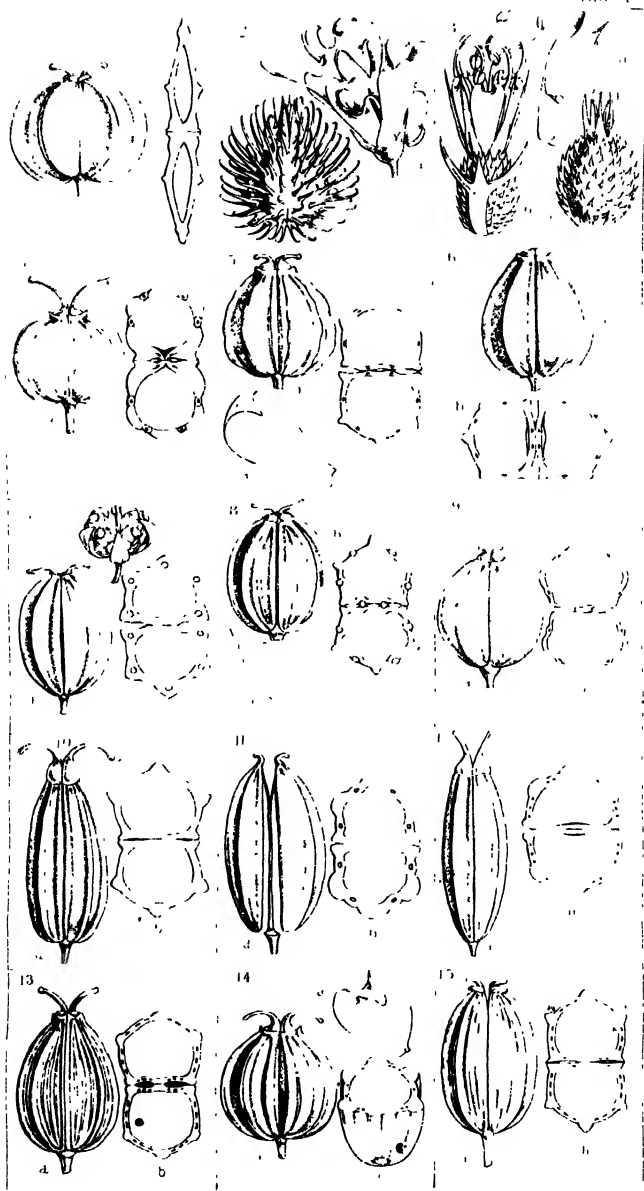
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- SCIRPUS** 81, *acicularis* 479, *Bæothryon* 483, *cæspitosus* 483, *caricinus* 478, *carinatus* 482, *Duvallii* 482, *filiformis* 480, *fluitans* 480, *glaucus* 481, *Holoschæmus* 481, *lacustris* 481, *leptaleus* 480, *maritimus* 482, *multicaulis* 479, *palustris* 478, 479, *parvulus* 483, *pauciflorus* 483, *pungens* 482, *Rothii* 482, *rufus* 478, *Sawi* 480, *setaceus* 480, *sylvaticus* 482, *Tabernæmontani* 481, *tenuifolius* 482, *trigonus* 482, *triqueter*, 482.
- SCLERANTHACEÆ** 352.
- SCLERANTHUS** 353, *annuus* 353, *perennis* 353.
- Sclerochloa Borreri* 536, *distans* 535, *loliacea* 537, *maritima* 535, *procumbens* 536, *rigida* 536.
- SCOLOPENDRIUM** 574, *Ceterach* 566, *Officinarium* 574, *vulgare* 574.
- SCROPHULARIA** 297, *aquatica* 298, *Ehrharti* 298, *nodosa* 297, *Scorodonia* 298, *vernalis* 298.
- SCROPHULARIACEÆ** 298.
- SCUTELLARIA** 324, *galericulata* 324, *minor* 324.
- SEDUM** 147, *acre* 148, *album* 148, *Anglicum* 148, *dasyphyllum* 148, *Forsterianum* 149, *glaucum* 149, *purpurascens* 147, *purpureum* 147, *reflexum* 149, *Rhodiola* 147, *rupestre* 149, *sexangulare* 149, *Telephium* 147, *villosum* 148.
- S. linum palustre* 172.
- SEMPERVIVUM** 147, *tectorum* 147.
- SENEBIERIA** 38, *Coronopus* 38, *didyma* 38.
- SENECIO** 237, *aquaticus* 238, *campestris* 239, *crucifolius* 238, *Jacobæa* 238, *lividus* 237, *paludosus* 238, *palustris* 239, *Saracenicus* 238, *squalidus* 238, *sylvaticus* 237, *tenuifolius* 238, *viscosus* 237, *vulgaris* 237.
- Scropias cnsifolia* 417, *grandiflora* 417, *latifolia* 416, *longifolia* 417, *palustris* 417, *rubra* 417.
- SERRATULA** 219, *tinctoria* 219.
- Serrafalcus arvensis* 549, 550, *mollis* 549, *patulus* 550, *racemosus* 550, *secalinus* 543, *squarrosus* 551.
- SEBELI** 169, *Libanotis* 169.
- SEBLERIA** 531, *cærulea* 532.
- SETARIA** 533, *glauca* 533, *verticillata* 533, *viridis* 533.
- SHERARDIA** 190, *arvensis* 190.
- SIBBALDIA** 125, *procumbens* 125.
- SIBTHORPIA** 302, *Europæa* 302.
- SILAEUS** 170, *pratensis* 170.
- SILENE** 57, *acaulis* 57, *alpestris* 59, *Anglica* 58, *Armeria* 60, *conica* 59, *inflata* 58, *Italica* 59, *maritima* 58, *noctiflora* 60, *nutans* 59, *Otites* 58, *paradoxa* 59, *patens* 59, *quinquevulnera* 58.
- SILENEÆ** 55.
- Silybum Marianum* 221.

- IMETHIS 436, bicolor 436.  
 INAPIS 40, alba 41, arvensis 41, *Cheiranthus* 40, incana 41, *muralis* 42, nigra 40, *tenuifolia* 41.  
 ISON 163, Amomum 163, *inundatum* 163, *segetum* 162.  
 ISYMBRIUM 34, *amphibium* 28, Irio 34, *Monense* 40, *murale* 42, *Nasturtium* 27, officinale 34, Sophia 34, *sylvestre* 27, *tenuifolium* 41, *terrestre* 28, *Thalianum* 34.  
 ISYRRHYNCHIUM 426, *anceps* 427.  
 IUM 165, angustifolium 165, latifolium, 165, *nodiflorum* 162, *repens* 162.  
 MYRNIUM 175, Olusatrum 175.  
 JOLANACEÆ 281.  
 JOLANUM 283, Dulcamara 283, nigrum 283.  
 JOLIDAGO 236, *Cambrica* 237, *lanceolata* 237, *Virgaurea* 236.  
 JONCHUS 205, arvensis 205, asper 206, *cæruleus* 205, oleraceus 205.  
 Jorbus *aucuparia* 133, *domestica* 133.  
 JARGANIUM 461, *erectum* 461, natans 461, ramosum 461, simplex 461.  
 JPARTINA 561, *alterniflora* 561, *glabra* 562, *levigata* 562, *stricta* 561.  
 Jpartium *scoparium* 95.  
 Jspecularia *hybrida* 249  
 JPERGULA 145, arvensis 145, *nodosa* 64, *pentandra* 145, *saginoidea* 63, *stricta* 66, *subulata* 64.  
 JPERGULARIA 144, marina 145, rubra 144.  
 JPIRÆA 117, *Filipendula* 117, *salicifolia* 117, *Ulmaria* 117.  
 Jspiranthes *æstivales* 419, *autumnalis* 418, *cernua* 419.  
 Jspiradela *polyrrhiza* 484.  
 JIACHYS 318, *alpina* 319, *ambigua* 319, *annua* 320, arvensis 319, Germanica 319, *lanata* 319, *palustris* 319, *sylvatica* 319.  
 JSTAPHYLEA 88, *pinnata* 88.  
 JSTAPHYLEACEÆ 87.  
 JSTATICE 335, *Armeria* 335, Bahusiensis 336, binervosa 336, *cancellata* 337, Caspia 337, *cordata* 336, *Dodartii* 336, *Limonium* 336, *occidentalis* 336, *plantaginæ* 335, *raviflora* 336, *reticulata* 337, *spathulata* 336.  
 Jstecnammera *maritima* 276.  
 JTELLARIA 68, *cerastoides* 73, glauca 69, graminea 69, holostea 68, media 68, nemorum 68, *scapigera* 69, uliginosa 69.  
 JTIPIA 521, *pennata* 521.  
 JTRATIOTES 412, *aloides* 412.  
 Jturmia *Larselii* 415.  
 JUEDA 351, fruticosa 351, *maritima* 352.  
 JUBULARIA 36, *aquatica* 36.  
 JINERTIA 265, *perennis* 268.  
 JYMPHYTUM 279, officinale 280, *tuberosum* 280.  
 Jsyntherisma *glabrum*, 563.  
 JAMARICACEÆ 140.  
 JAMARIX 140, Anglica 141, Gallica 141.  
 JAMUS, 431, communis 431.  
 JANACETUM 228, vulgare 229.  
 JANAXACUM *Dens-Leonis*, 208, officinale 208, *palustre* 208.  
 JAXUM 407, *baccata* 407, *fastigiata* 408.  
 JFEEDALIA 32, *nudicaulis* 32.  
 Jtelmatophare *gibba* 465.  
 JTEUCRIUM 312, Botrys 312, *Chamaedryx* 313, *chamaepitys* 314, *palustre* 312, *regium* 313, *scordioidea* 312, *Scordium* 312, *Scorodonia* 312.  
 JPHALAMIFLORÆ 1.  
 JHALICTRUM 4, *alpinum* 5, *calcareum* 5, flavum 5, *Arzuzum*, 5, *fatidum* 5, *Kochii* 5, *majus* 5, *minus* 5, *nutans* 5, *pubescens* 5, *saxatile* 5.  
 JHESUM 362, *humifusum* 362, *humile* 362, *linophyllum* 362.  
 JHLANPI 31, *alpestre* 32, arvensis 31, *Bursa-Pastoris* 36, *campestre* 37, *hirtum* 37, *perfoliatum* 32.  
 JHULASPIDVÆ 31.  
 JHIRNCIA 203, *hirta* 203.  
 JHYMELACEÆ 361.  
 JHYMUS 311, *Acinos* 321, *Calamintha* 322, *Nepeta* 322, *Serpyllum* 311.  
 JILIA 77, *Europæa* 78, *grandiflora* 78, *intermedia* 78, *microphylla* 77, *parvifolia* 77.  
 JILIACEÆ 77.  
 JILLÆA 146, *muscosa* 146.  
 JTOFIELDIA 415, *borealis* 445, *palustris* 445.  
 JTORDVLIVM 173, *maximum* 174, officinale 174.  
 JTORILIA 179, *Anthriscus* 180, *infesta* 180, *nodosa* 180.  
 JTormentilla *officinalis* 124, *reptans* 124.  
 JTRAGOPOGON 201, *major* 201, *minor* 201, porrifolius 201, *pratensis* 201.  
 JTrichodium *caninum* 523, *setaceum* 523.  
 JTRICHOMANES 566, *brevisetum* 566, *Prædicans* 566.  
 JTRICHONEMA 427, *Bulbocodium* 428, *Columnæ* 428.

- TRIENTALIS** 331, *Europæa* 331.  
**TRIFOLIUM** 99, *arvense* 101, *Bocconi* 102, *congestum* 102, *elegans* 100, *filiforme* 104, *fragiferum* 103, *glomeratum* 102, *incarnatum* 101, *maritimum* 101, *medium* 100, *micranthum* 104, *minus* 103, *ochroleucum* 100, *officinale* 98, *ornithopodoides* 99, *parviflorum* 103, *pratense* 100, *procumbens* 103, *repens* 99, *resupinatum* 103, *sca-brum* 102, *stellatum* 101, *striatum* 101, *strictum* 102, *subterraneum* 100, *suffo-catum* 102, *Vaillantii* 100.  
**TRIGLOCHIN** 458, *maritimum* 459, *palustre* 459.  
**TRIGONELLA** 97, *ornithopodoides* 99.  
**TRILLIACEÆ** 431  
**TRINIA** 162, *glaberrima* 162, *vulgaris* 162.  
**TRIODIA** 540, *decumbens* 540.  
*Tripodium vulgare* 236.  
*Trisetum flavescens* 553, *pratense* 552, *pubescens* 553.  
**TRITICUM** 555, *alpinum* 557, *biflorum* 557, *caninum* 557, *cristatum* 556, *junc-titorale* 557, *loliaceum* 557, *pinnatum* 558, *repens* 556, *sylvaticum* 557.  
**TROLIUS** 11, *Europæus* 11.  
**TULIPA** 443, *sylvestris* 443.  
*Turgenia latifolia* 179.  
**TURRITIS** 24, *alpina* 25, *glabra* 25, *hirsuta* 25.  
**TUSILAGO** 235, *alpina* 234, *Farfara* 235, *fragrans* 235, *hybrida* 234, *Petasites* 234.  
**TYPHA** 460, *angustifolia* 460, *elatio* 460, *latifolia* 460, *media* 460, *minima* 461, *minor* 461.  
**TYPHACEÆ** 460.  
*Udora Canadensis* 411.  
**ULEX** 93, *Europæus* 94, *Gallii* 94, *nanus* 94, *strictus* 94.  
**ULMACEÆ** 375.  
**ULMUS** 375, *campestris* 376, *carpinifolia* 376, *glabra* 376, *Hollandica* 376, *major* 376, *montana* 377, *stricta* 376, *suberosa* 376.  
**UMBELLIFERÆ** 156.  
**URTICA** 373, *dioica* 373, *Dodartii* 373, *integrifolia* 373, *pilulifera* 373, *urens* 373.  
**URTICACEÆ** 372.  
**UTRICULARIA** 326, *intermedia* 327, *minor* 327, *vulgaris* 327.  
*Vaccaria* 54, *vulgaris* 57.  
**VACCINIACEÆ** 251.  
**VACCINIUM** 251, *macrocarpon* 252, *Myrtillus* 251, *Oxycoccus* 252, *uliginosum* 252, *Vitis* 252.  
*Valantia Aparine* 189.  
**VALERIANA** 192, *angustifolia* 192, *dentata* 194, *dioica* 192, *Locusta* 193, *Morisonii* 194, *officinalis* 192, *procurrens* 192, *Pyrenaica* 192, *rubra* 192, *sambucifolia* 192, *uligi-nosa* 192.  
**VALERIANACEÆ** 191.  
**VELLA** 42, *annua* 42.  
**VELLEÆ** 42.  
**VERBASCUM** 302, *Blattaria* 303, *ferrugineum* 304, *floccosum* 304, *Lychnites* 304, *ni-grum* 304, *phlomooides* 304, *pharbiticum* 304, *pulverulentum* 304, *thapsiiforme* 303, *thapsoides* 303, *Thapsus* 303, *virgatum* 303.  
**VERBENA** 325, *officinalis* 325.  
**VERBENACEÆ** 324.  
**VERONICA** 289, *agrestis* 292, *alpina* 289, *Anagallis* 290, *arvensis* 292, *Beccabunga* 290, *Buxbaumii* 292, *Chamaedrys* 291, *fruticulosa* 290, *hederifolia* 291, *hirsuta* 291, *humifusa* 289, *hybrida* 290, *linosa* 291, *montana* 291, *officinalis* 291, *opaca* 292, *polita* 292, *saxatilis* 290, *scutellata* 290, *serpyllifolia* 289, *spicata* 289, *triphyllos* 292, *verna* 292.  
**VIBURNUM** 184, *Lantana*, 184, *Opulus* 184.  
**VICIA** 108, *angustifolia* 109, *Bithynica* 110, *Bobartii* 109, *Cracea* 110, *gracilis* 111, *hirsuta* 111, *hybrida* 110, *lævigata* 109, *lathyroides* 108, *lutea* 110, *Orobis* 110, *sativa* 109, *sepium* 109, *sordida* 109, *sylvatica* 111, *tetrasperma* 111.  
**VILLARSA** 269, *nymphæoides* 269.  
**VINCA** 264, *major* 265, *minor* 264.  
**VIOLA** 46, *amæna* 49, *arvensis* 49, *canina* 47, *Curtisii* 49, *flavicornis* 47, *hirta* 46, *imberbis* 47, *lactea* 48, *lutea* 49, *montana* 48, *odorata* 46, *palustris* 47, *pumila* 47, *stagnina* 48, *sylvatica* 47, *tricolor* 48.  
**VICUS** 183, *album* 183.  
*Wahlenbergia hederacea* 249.  
**WOODSIA** 567, *hyperborea* 567, *Ilvensis* 567.  
**XANTHIUM** 245, *strumarium* 246.  
**ZANNICHELLIA** 472, *palustris* 472, *pedunculata* 472, *polycarpa* 472.  
**ZOSTERA** 472, *angustifolia* 473, *marina* 473, *nana* 473.





THE BINDER *will observe that these explanations must be placed opposite their respective Plates.*

## TAB. I.

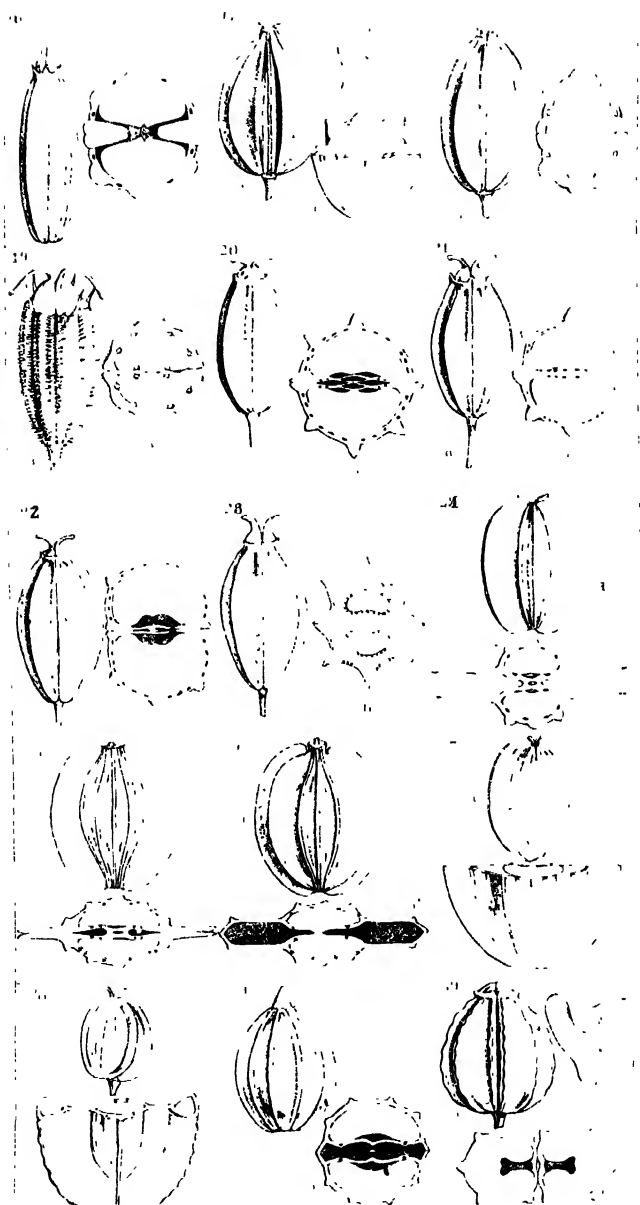
### UMBELLIFERÆ.

- Fig. 1. *a.* Fruit of HYDROCOTYLE.—*b.* Transverse section of the same.
- Fig. 2. SANICULA.—*a.* Sterile flower. *b.* Fruit.
- Fig. 3. ERYNGIUM.—*a.* Petal. *b.* Flower with a 3-cleft scale at its base. *c.* Fruit.
- Fig. 4. CICUTA.—*a.* Fruit. *b.* Transverse section.
- Fig. 5. APIUM.—*a.* Petal. *b.* Fruit. *c.* Transverse section.
- Fig. 6. PETROSELINUM.—*a.* Fruit. *b.* Transverse section.
- Fig. 7. TRINIA.—*a.* Sterile fl. *b.* Fruit. *c.* Transverse section.
- Fig. 8. HELOSCIADIUM.—*a.* Petal. *b.* Fruit. *c.* Transverse section.
- Fig. 9. SISON.—*a.* Fruit. *b.* Transverse section.
- Fig. 10. ÆGOPODIUM.—*a.* Fruit. *b.* Transverse section.
- Fig. 11. CARUM.—*a.* Fruit. *b.* Transverse section.
- Fig. 12. BUNIUM.—*a.* Fruit. *b.* Transverse section.
- Fig. 13. PIMPINELLA.—*a.* Fruit. *b.* Transverse section.
- Fig. 14. SIUM.—*a.* Petal. *b.* Fruit. *c.* Transverse section of a single carpel.
- Fig. 15. BUPLÉURUM.—*a.* Fruit. *b.* Transverse section.









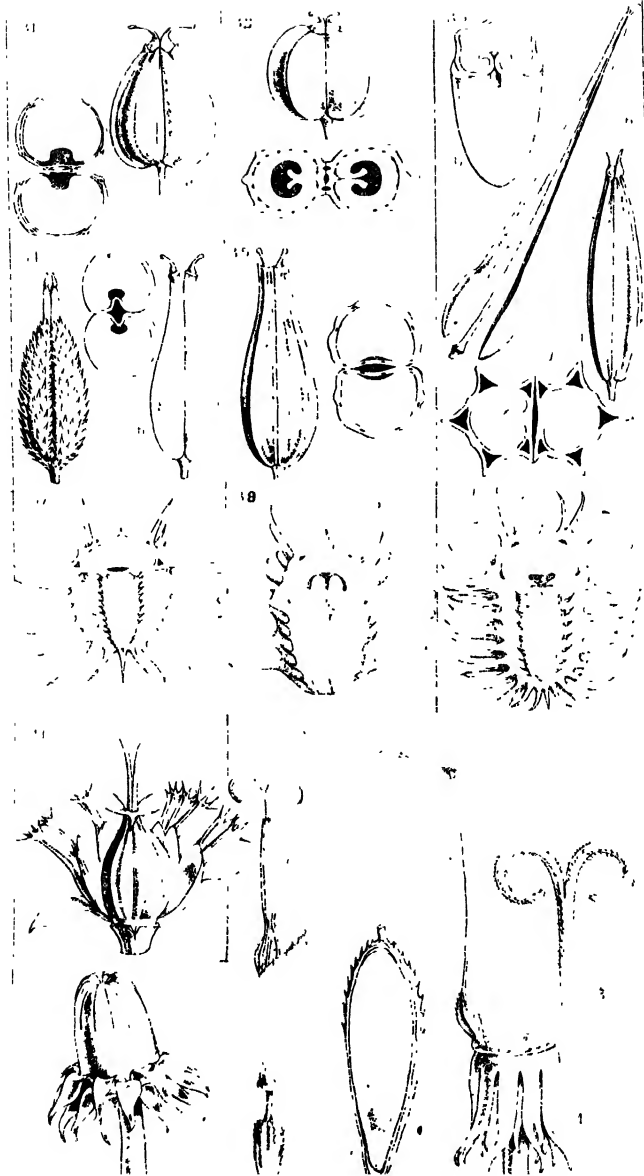
## TAB. II.

### UMBELLIFERÆ — *continued.*

- Fig. 16. *CENANTHE*. — *a.* Fruit. *b.* Transverse section.  
Fig. 17. *ÆTHUSA*. — *a.* Petal. *b.* Fruit. *c.* Transverse section.  
Fig. 18. *FENICULUM*. — *a.* Fruit. *b.* Transverse section.  
Fig. 19. *SESELI*. — *a.* Fruit. *b.* Transverse section.  
Fig. 20. *LIGUSTICUM*. — *a.* Fruit. *b.* Transverse section.  
Fig. 21. *SILAU*. — *a.* Fruit. *b.* Transverse section.  
Fig. 22. *MEUM*. — *a.* Fruit. *b.* Transverse section.  
Fig. 23. *CRITHMUM*. — *a.* Fruit. *b.* Transverse section.  
Fig. 24. *ANGELICA*. — *a.* Fruit. *b.* Transverse section.  
Fig. 25. *PEUCEDANUM*. — *a.* Fruit. *b.* Transverse section.  
Fig. 26. *PASTINACA*. — *a.* Fruit. *b.* Transverse section.  
Fig. 27. *HERACLEUM*. — *a.* Fruit. *b.* Transverse section of a  
single carpel.  
Fig. 28. *TORDYLIUM*. — *a.* Fruit. *b.* Transverse section of a  
single carpel.  
Fig. 29. *CORIANDRUM*. — *a.* Fruit. *b.* Transverse section.  
Fig. 30. *CONIUM*. — *a.* Petal. *b.* Fruit. *c.* Transverse section







## TAB. III.

### UMBELLIFERÆ — *continued*.

- Fig. 31. **PHYSOSPERMUM.** — *a.* Fruit. *b.* Transverse section.  
 Fig. 32. **SMYRNIUM.** — *a.* Fruit. *b.* Transverse section.  
 Fig. 33. **SCANDIX.** — *a.* Fruit. *b.* Transverse section of a single  
                     carpel.  
 Fig. 34. **ANTHRISCUS.** — *a. b.* Fruits. *c.* Transverse section.  
 Fig. 35. **CHÆROPHYLLUM.** — *a.* Fruit. *b.* Transverse section.  
 Fig. 36. **MYRRHIS.** — *a.* Fruit. *b.* Transverse section.  
 Fig. 37. Transverse section of a single carpel of **DAUCUS.**  
 Fig. 38.           Do.                   do.           of **CAUCALIS.**  
 Fig. 39.           Do.                   do.           of **TORILIS.**  
 Fig. 40. Fruit of **ECHINOPHORA**, with its curious prickly re-  
                     ceptacle.

### COMPOSITÆ.

- A. LEONTODON.** (For the explanation of these figures, see  
                     p. 200. foot-note.)









**TAB. IV.**

**COMPOSITÆ — *continued.***

**A. CARDUUS.**

**B. CENTAUREA.**

(For the explanation of these figures, see p. 218. foot-note.)

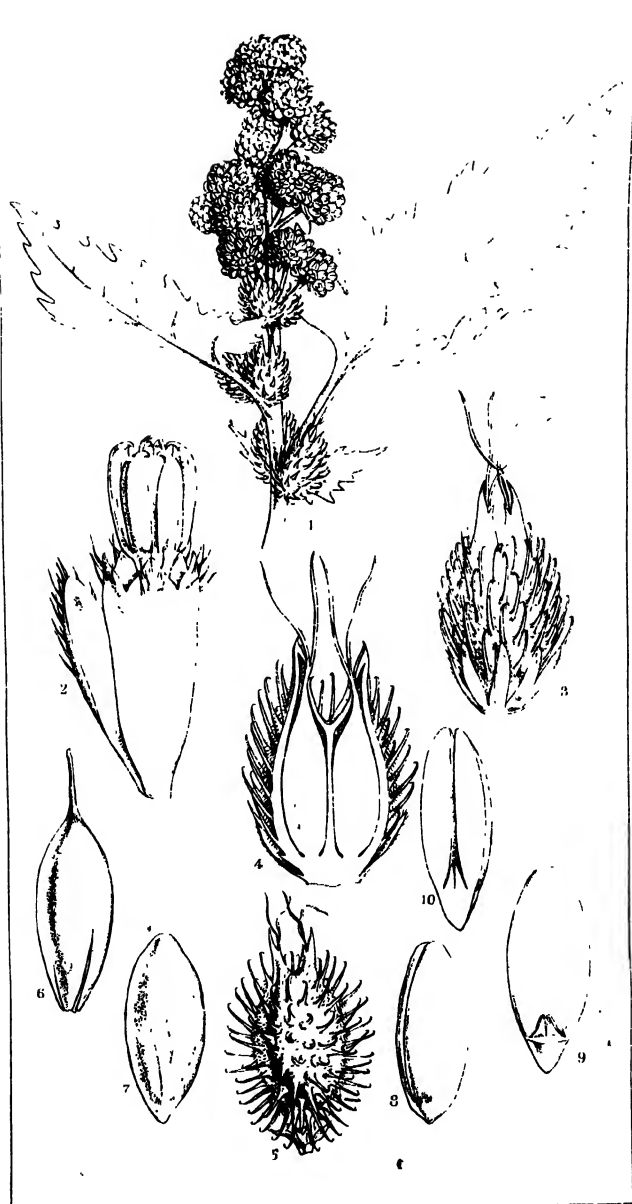
**C. DIOTIS.**

**D. BELLIS.**

(For an explanation of these figures, see p. 227. foot-note.)







**TAB. V.**

**COMPOSITÆ.**

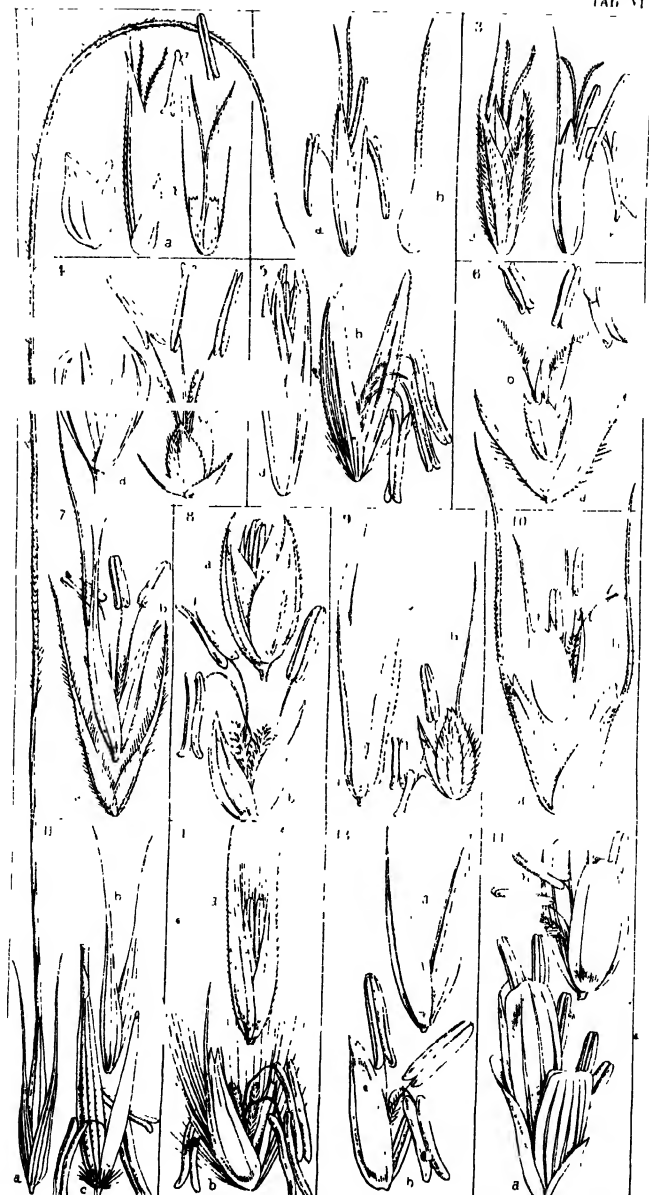
**Anomalous Genus.**

**XANTHIUM.** (For the explanation of these figures, see p. 247.  
foot-note.)









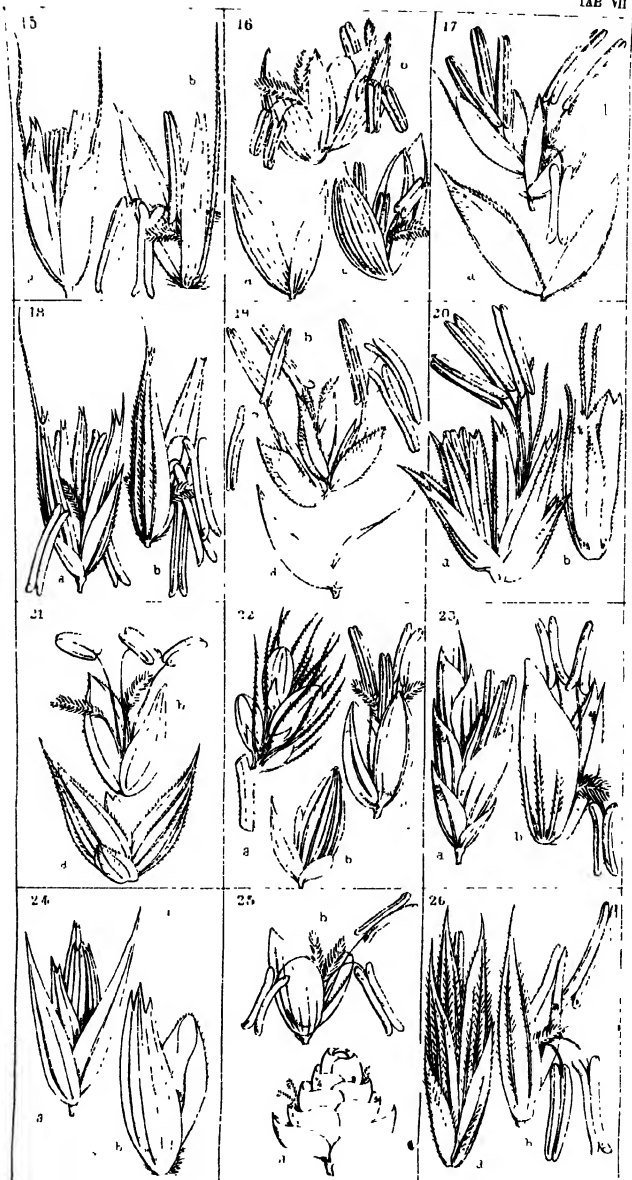
## TAB. VI.

### GRASSES.

- Fig. 1. *ANTHOXANTHUM*. — *a*. Spikelet. *b*. The same from which the glumes are removed, showing the two neuter glumellas. *c*. The glumellas of the inner awnless and fertile floret.
- Fig. 2. *NARDUS*. — *a*. The two glumellas destitute of glumes. *b*. Pistil with its single style.
- Fig. 3. *ALOPECURUS*. — *a*. Spikelet with its two glumes. *b*. Solitary glumella with its awn.
- Fig. 4. *PHALARIS*. — *a*. Glumes. *b*. Glumellas of the fertile floret with the glumellas of 2 other neuter florets.
- Fig. 5. *AMMOPHILA*. — *a*. Spikelet. *b*. Floret, with the tuft of hairs at the base.
- Fig. 6. *PHLEUM*. — *a*. Glumes. *b*. Floret with its 2 glumellas.
- Fig. 7. *LAGURUS*. — *a*. Glumes. *b*. Floret with its glumellas.
- Fig. 8. *MILIUM*. — *a*. Spikelet. *b*. Floret.
- Fig. 9. *GASTRIDIMUM*. — Glumes, swollen at the base. *b*. Floret with its 2 glumellas.
- Fig. 10. *POLYPOGON*. — *a*. Glumes. *b*. Floret with its glumellas.
- Fig. 11. *STIPA*. — *a*. Spikelet with the very long twisted awn terminating the floret. *b*. Glumes. *c*. Glumellas; the long awn being cut away from the outer one.
- Fig. 12. *CALAMAGROSTIS*. — *a*. Spikelet. *b*. Floret, surrounded by hairs at the base.
- Fig. 13. *AGROSTIS*. — *a*. Glumes. *b*. Floret with the glumellas.
- Fig. 14. *CATABROSA*. — *a*. Spikelet. *b*. Floret.







## TAB. VII.

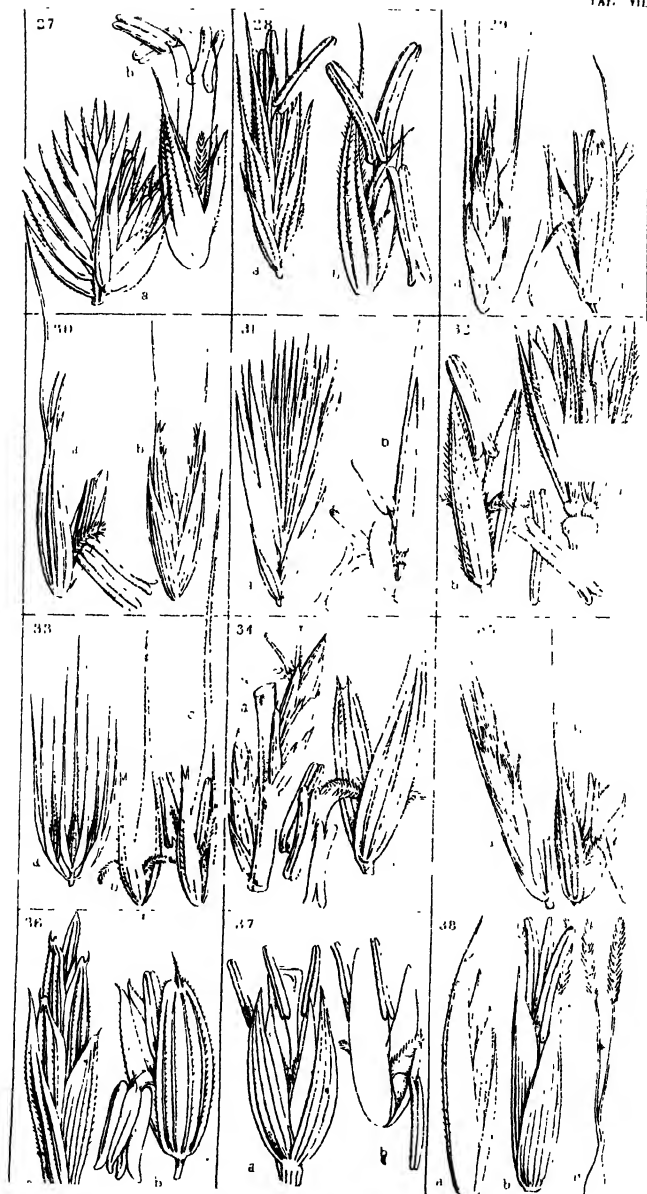
### GRASSES — *continued.*

- Fig. 15. *AIRA*. — *a.* Spikelet. *b.* Floret.
- Fig. 16. *MELICA*. — *a.* Glumes. *b.* Two florets from the spikelet, with the rudiment of a third floret between them. *c.* One fertile floret from the spikelet with its neuter floret.
- Fig. 17. *HOLCUS*. — *a.* Glumes. *b.* Two florets from the calyx; the upper one with stamens only and awned; the lower one perfect and awnless.
- Fig. 18. *ARRHENATHERUM*. — *a.* Spikelet, with 2 florets, the lowest floret with stamens only, and a long twisted awn; the upper (shown separately at *b.*) perfect, with a short straight awn.
- Fig. 19. *HIEROCHLOE*. — *a.* Glumes. *b.* The 3 florets, of which the two lateral ones have 3 perfect stamens only and no pistil; the middle one perfect, diandrous.
- Fig. 20. *SESLERIA*. — *a.* Spikelet. *b.* Floret.
- Fig. 21. *PANICUM*. — *a.* Unequal glumes with the neuter floret inside the smaller glume. *b.* Fertile floret.
- Fig. 22. *SETARIA*. — *a.* Bristly involucre with the spikelets. *b.* Unequal glumes, with the neuter floret inside the smaller one. *c.* Perfect floret.
- Fig. 23. *POA*. — *a.* Spikelet. *b.* Floret.
- Fig. 24. *TRIODIA*. — *a.* Spikelet. *b.* Glumellas of a floret.
- Fig. 25. *BRIZA*. — *a.* Spikelet. *b.* Floret.
- Fig. 26. *DACTYLIS*. — *a.* Spikelet. *b.* Floret.









## TAB. VIII.

### GRASSES — *continued*.

- Fig: 27. *CYNOSURUS*. — *a*. Spikelet, with the pectinated involucre. *b*. Floret.
- Fig. 28. *FESTUCA*. — *a*. Spikelet. *b*. Floret.
- Fig. 29. *BROMUS*. — *a*. Spikelet. *b*. Floret.
- Fig. 30. *AVENA*. — *a*. Floret. *b*. Spikelet.
- Fig. 31. *PHRAGMITES*. — *a*. Spikelet. *b*. Floret.
- Fig. 32. *ELYMUS*. — *a*. Two spikelets each with 2 florets from the same joint of the rachis. *b*. Floret.
- Fig. 33. *HORDEUM*. — *a*. Three spikelets from the same joint of the rachis, each with a single floret. *b*. One of the lateral (sterile) florets. *c*. Central (perfect) one.
- Fig. 34. *TRITICUM*. — *a*. Two spikelets, one from each joint of the rachis. *b*. Floret.
- Fig. 35. *BRACHYPODIUM*. — *a*. Spikelet. *b*. Floret.
- Fig. 36. *LOLIUM*. — *a*. Spikelet with its single glume. *b*. Floret.
- Fig. 37. *LEPTURUS*. — *a*. Spikelet on the rachis, with the 2 collateral glumes. *b*. Floret.
- Fig. 38. *SPARTINA*. — *a*. Spikelet. *b*. Floret. *c*. Pistil.







## TAB. IX.

### GRASSES — *continued*.

- Fig. 39. *KNAPPIA*. — *a*. Spikelet. *b*. Floret and glumellas.  
 Fig. 40. *CYNODON*. — *a*. Portion of a spike. *b*. Spikelet.  
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 Fig. 42. Pistil of a *grass* with its hypogynous scales. *b*. Portion of the stem of a *grass* with the *ligule* upon the leaf, and the sheath slit on one side. *c—g*. Examples of the inflorescence of *Grasses*. *c*. Spiked panicle as in *Anthoxanthum*. *d*. Panicle as in *Briza minor*. *e*. Spike, the spikelets distichous, as in *Lolium perenne*. *f*. Spike, the spikelets imbricated on all sides, as in *Triticum cristatum*. *g*. Partial spike unilateral, or with the flowers pointing one way, as in *Spartina stricta*.

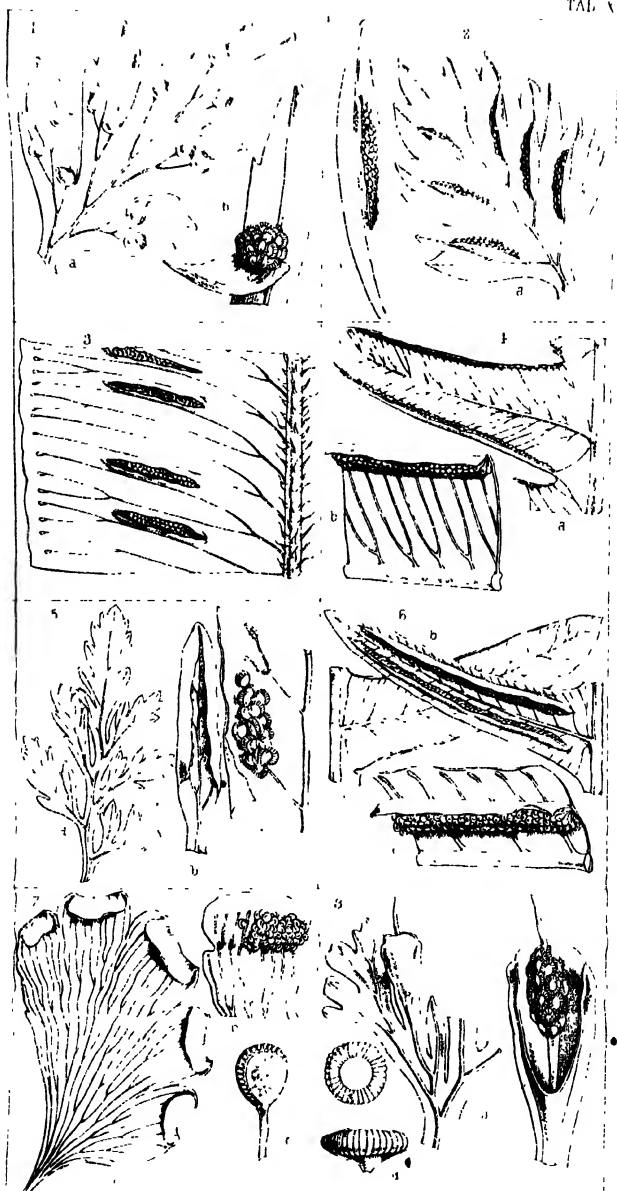
### FERNS.

- Fig. 1. *CETERACH*. — *a*. Segment of a frond with part of a scale removed. *b*. Capsule.  
 Fig. 2. *POLYPODIUM*. — *a*. Segment of a frond. *b*. Portion of do.  
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 Fig. 4. *ASPIDIUM*. — *a*. Pinna of first division; *b*. Sorus and involucre. — *c*. Pinnæ of second division; *d*. Sorus and involucre.









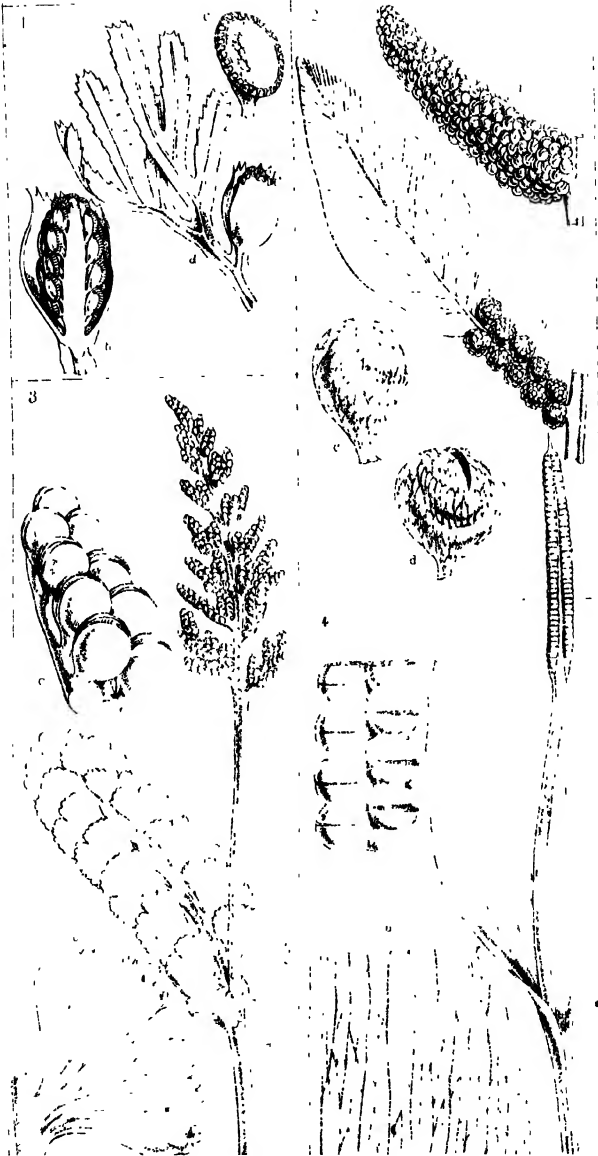
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### FERNS — *continued.*

- Fig. 1. *CYSTOPTERIS*. — *a.* Pinna. *b.* Sorus and involucre.  
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## TAB. XI.

### FILICES — *continued.*

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### OSMUNDACEÆ.

Fig. 2. OSMUNDA. — *a.* Portion of a fertile panicle. *b.* Portion of a sterile frond, the lower part fertile. *c. d.* Capsules.

### • OPHIOGLOSSACEÆ.

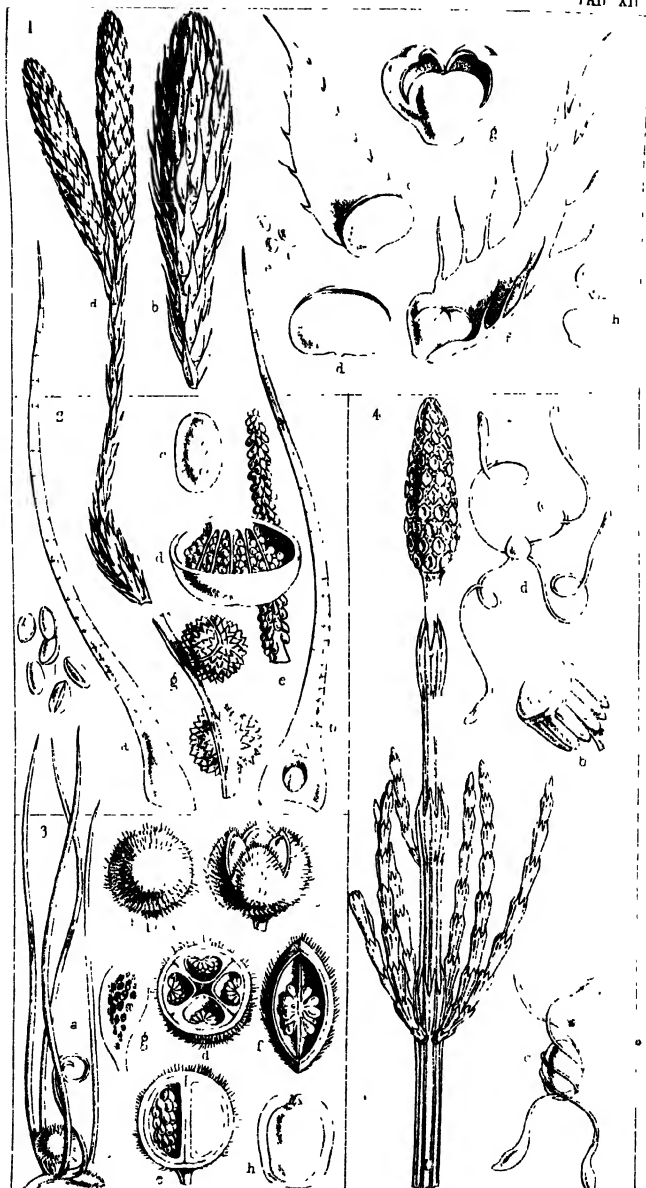
Fig. 3. BOTRYCHIUM. — *a.* Frond with its fructified portion. *b.* Sterile pinna. *c.* Capsules on the rachis.

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## TAB. XII.

### LYCOPODIACEÆ.

Fig. 1. *LYCOPodium*.—*a*. Fertile portion of a frond. *b*. Spike of another species.—*c*. Scale from *a*. with a 2-valved capsule. *d*. The capsule. *e*. The seeds.—*f*. Scale from *b*. with a 3-valved capsule. *g*. The capsule. *h*. The grains or seeds.

### MARSILEACEÆ.

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Fig. 3. *PILULARIA*.—*a*. Plant. *b*. *c*. Capsules. *d*. Capsule cut through transversely. *e*. The same cut through vertically. *f*. One of the cells. *g*. *h*. The two kinds of capsules.

### EQUISETACEÆ.

Fig. 4. *EQUISETUM*.—*a*. Apex of a plant. *b*. Scale with involucre from the spike. *c*. *d*. Seeds or grains from the involucre with their clavate filaments.



# NEW WORKS

## IN MISCELLANEOUS AND GENERAL LITERATURE,

PUBLISHED BY

MESSRS. LONGMAN, BROWN, GREEN, AND LONGMANS,

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